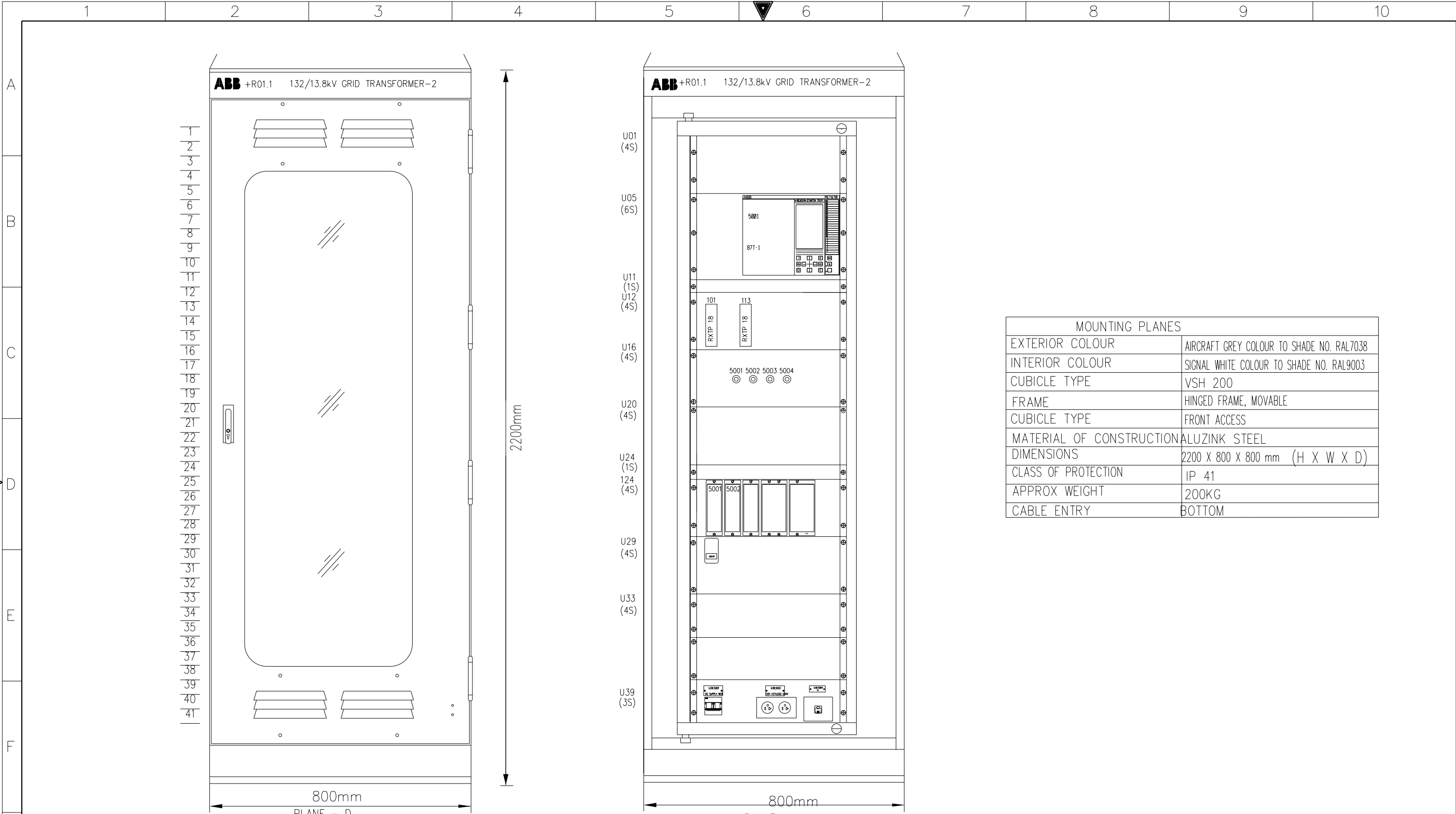


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A	<div>ABB</div> <div>POWER SYSTEMS NETWORK MANAGEMENT</div> <div>PROTECTION AND SUBSTATION AUTOMATION SYSTEMS</div> <div>WBS NO: S-13656</div>					<div>ABB AUTOMATION COMPANY LTD.,</div> <div>414, AL-KHARJ ROAD</div> <div>SECOND INDUSTRIAL CITY</div> <div>RIYADH-11383 K.S.A</div>																																																																			
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C	<div>CONTRACTOR : ABB Contracting Company</div> <div>CLIENT : National GridSA</div> <div>PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY</div> <div>SUBSTATION : S/S 8709</div> <div>CONTRACT NO. : 11131113/00</div> <div>TITLE : Assembly Drawing – +R01.1 [GT-2]</div>																																																																								
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>																																																															
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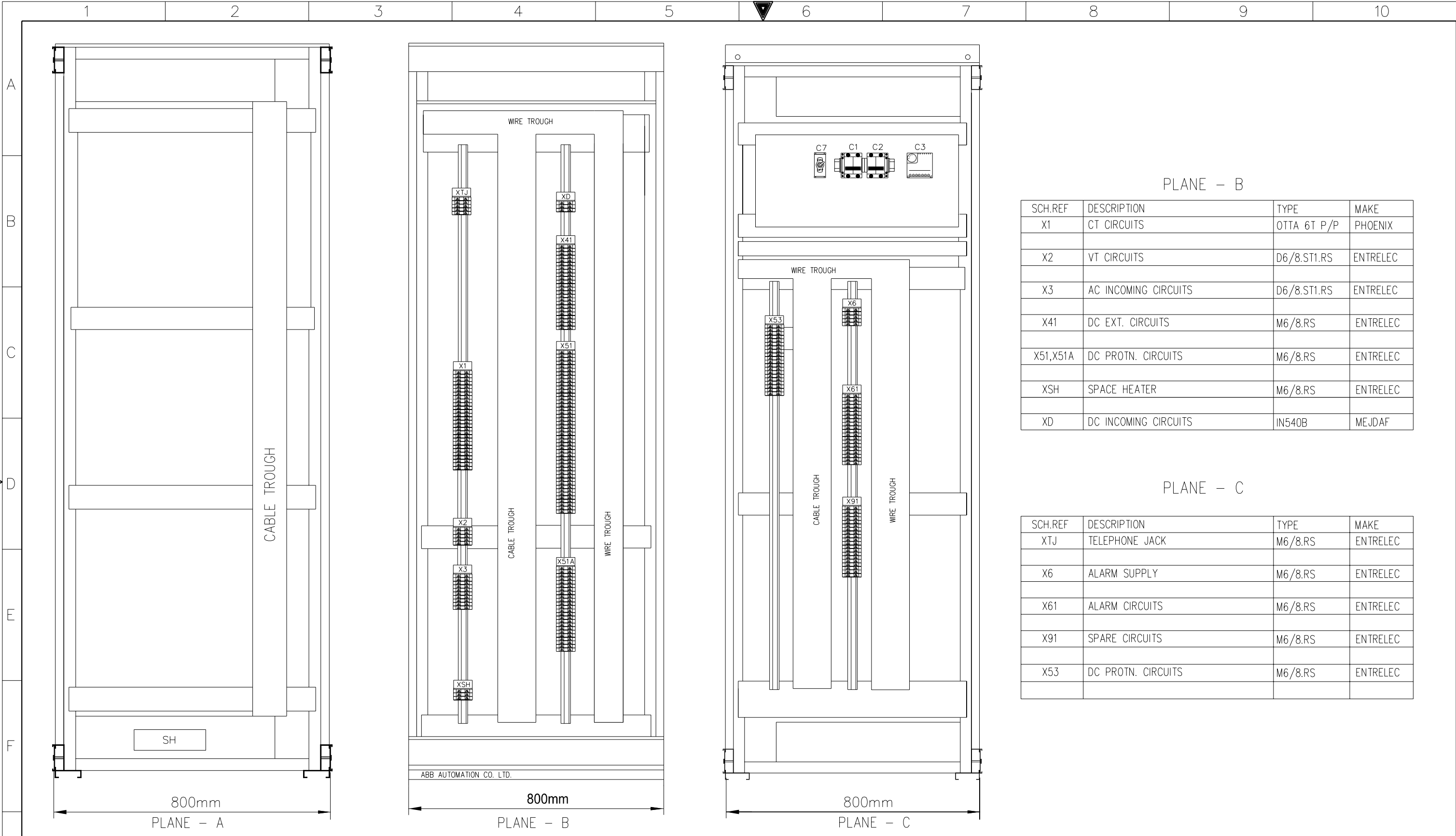


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

Ø1	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING
132/13.8kV GT-2 RELAY PANEL-1 +R01.1
S/S 87Ø9-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322929	SHT	CONT.	Ø1
			GØ1	GØ2	



PLANE – B

SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X41	DC EXT. CIRCUITS	M6/8.RS	ENTRELEC
X51,X51A	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC
XD	DC INCOMING CIRCUITS	IN540B	MEJDAF


PLANE – C

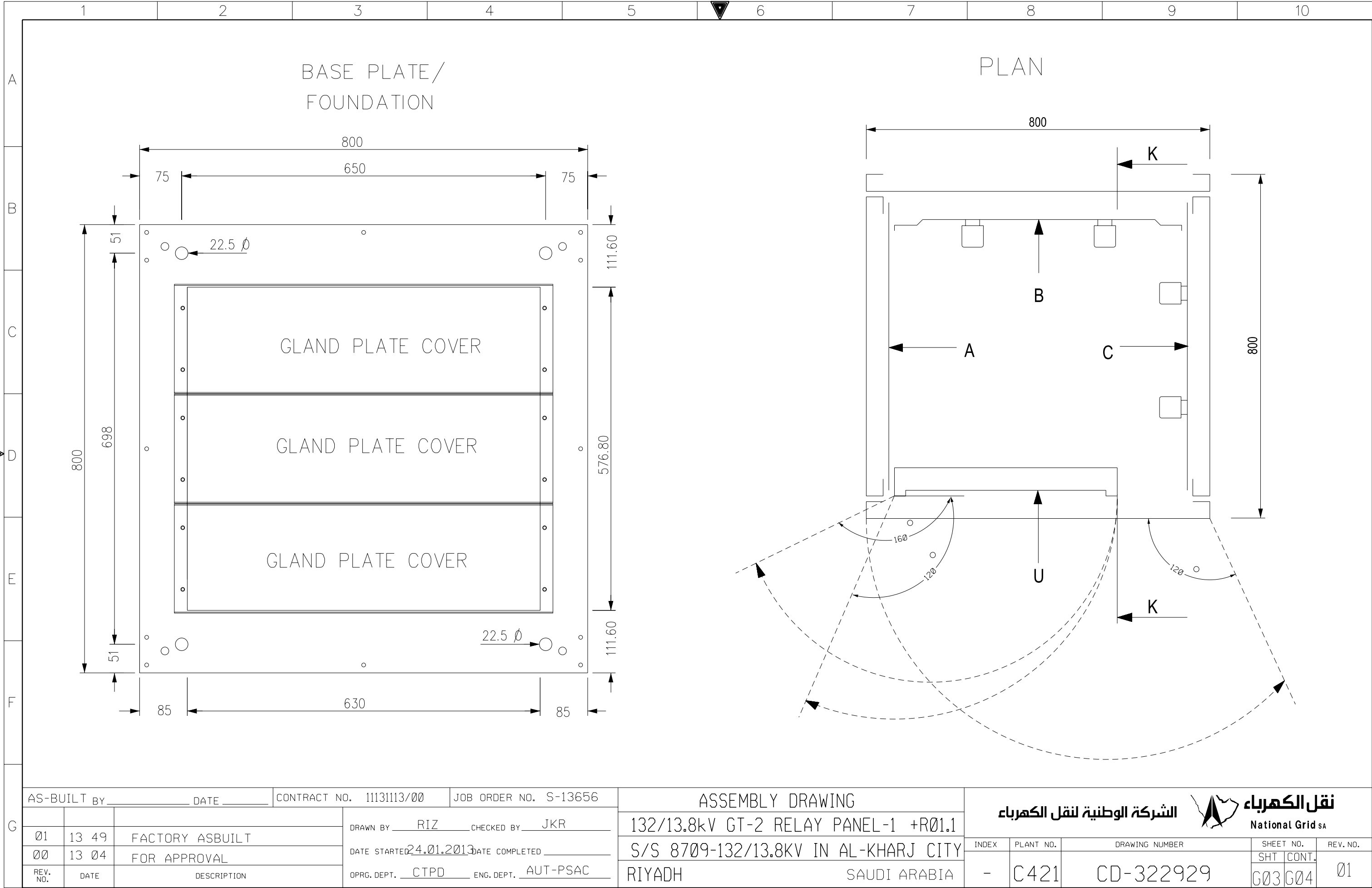
SCH.REF	DESCRIPTION	TYPE	MAKE
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.RS	ENTRELEC
X91	SPARE CIRCUITS	M6/8.RS	ENTRELEC
X53	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC

G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>			
00	13 04	FOR APPROVAL	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			

ASSEMBLY DRAWING					
132/13.8kV GT-2 RELAY PANEL-1 +R01.1					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء					 نقل الكهرباء National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322929		SHT G02	CONT. G03	01



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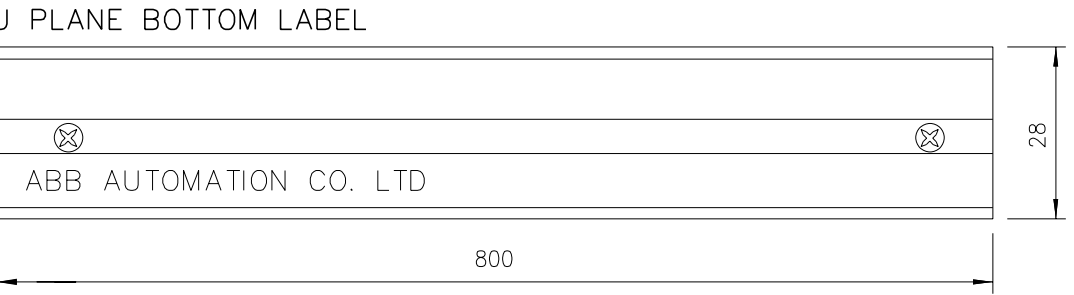
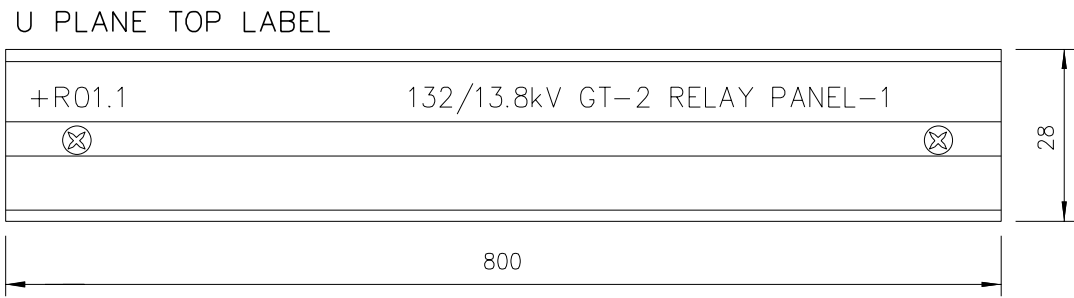
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TOP VIEW FOR EARTHING BAR



MANUFACTURING LABEL

ABB ABB Automation Co.Ltd.

PROJECT : National Grid SA
S/S 8709

ORDER REFERENCE : 2875 RF S13656

YEAR OF MANUFACTURE: 2013

PANEL NO. : +R01.1





DRAWING NO. : S13656-CD-323931

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

ASSEMBLY DRAWING	
132/13.8kV GT-2 RELAY PANEL-1 +R01.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD-322929	SHT	CONT.
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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																								
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C	CONTRACTOR : ABB Contracting Company																																																															
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D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																															
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	TITLE : LIST OF APPARATUS +R01.1 [GT-2]																																																															
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA							01																																																			

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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-1 +R01.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322929	SHT L01	CONT. L02	01
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							

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الشركة الوطنية لنقل الكهرباء

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INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
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	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>
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	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA		INDEX - PLANT NO. C421 DRAWING NUMBER CD-322929			SHEET NO. L03 CONT. L04 REV. NO. 01		

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	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				

الشركة الوطنية لنقل الكهرباء



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INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322929	SHT	CONT.	01
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NG/D2-D (2012/01)

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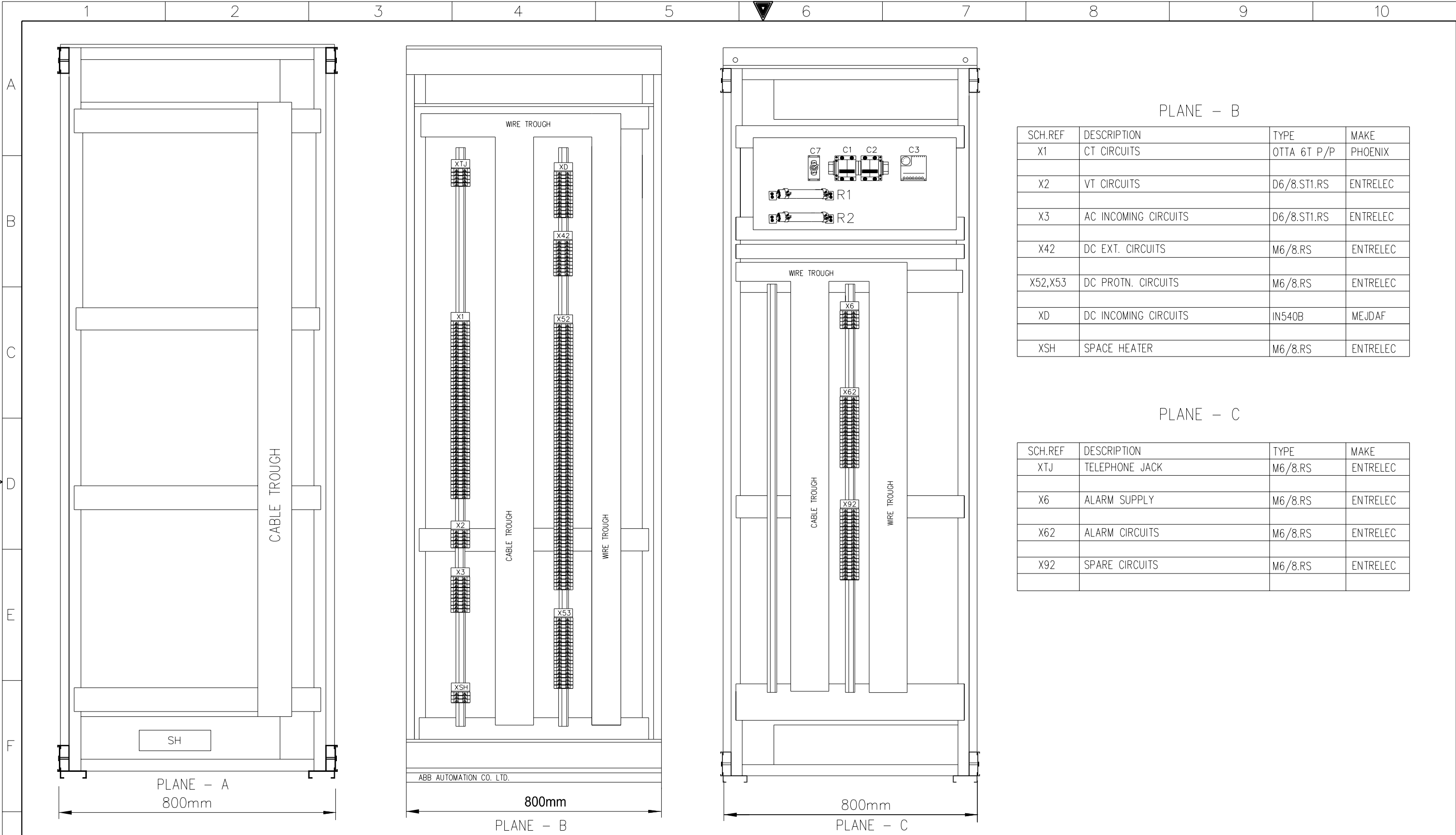
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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	22		X1	BLOT CONNECTING TERMINAL BLOCKS DISCONNECTIBLE FOR CT CIRCUITS		304	60	OTTA 6T P/P	PHOENIX	0790462
			X2	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		304	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
C			X3	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		304	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X41	SPRING LOADED TERMINAL BLOCK FOR DC EXT. CIRCUITS		304	40	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X51	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	97	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
D			X6	SPRING LOADED TERMINAL BLOCK FOR STN COM		304	10	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X61	KNIFE TYPE TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		304	20	M6/8.SNB	ENTRELEC	1SNA 115 688 R2500
			XTJ	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR TELEPHONE JACK		305	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
E			XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		305	3	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XD	TERMINAL BLOCKS WITH BLOCKING DIODE, Vrrm=1kV, If=3A AND SURGE TRAP, ENERGY ABSORPTION RATING 8J (10/1000mS)		236,276	3	N4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270
			X9	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR SPARE CONTACTS		295	20	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
F			X51A	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	15	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X53	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	32	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa	
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-1 +R01.1		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		- C421 CD-322929 L05L06 01	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		NG/D2-D (2012/01) DMS VECTOR NGD200	

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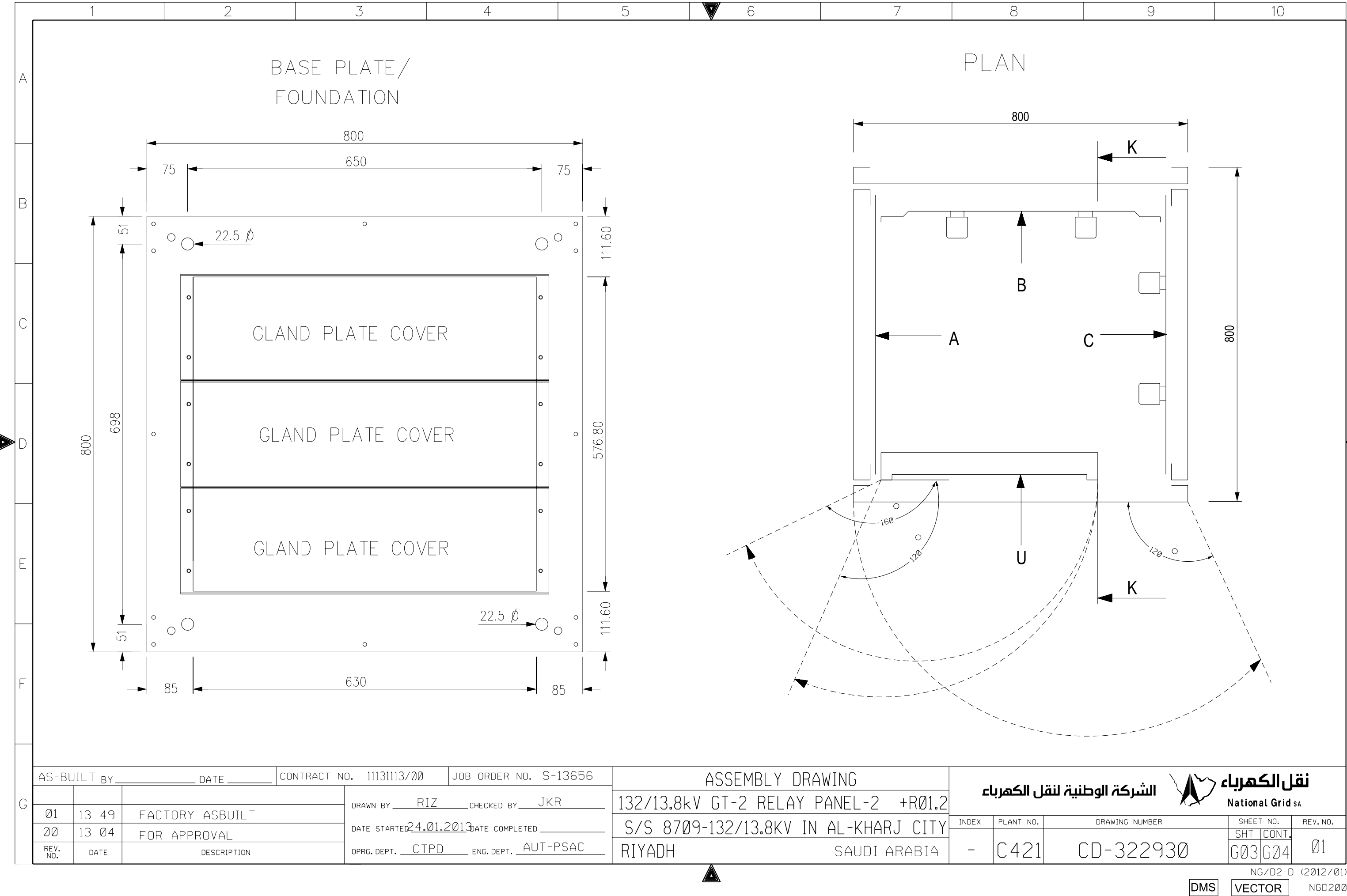
PLANE – B

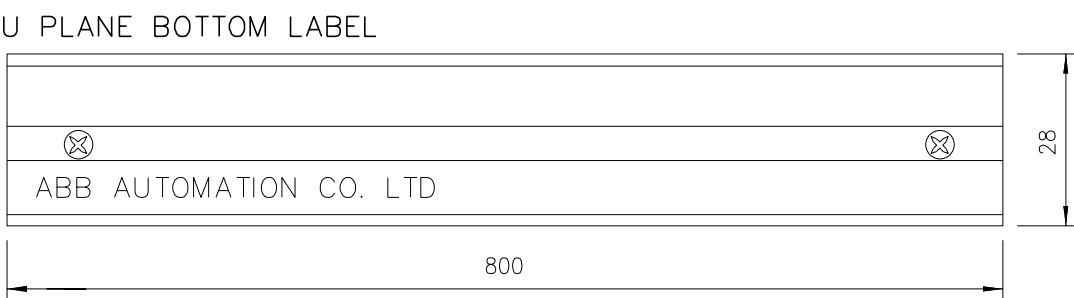
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC EXT. CIRCUITS	M6/8.RS	ENTRELEC
X52,X53	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC
XD	DC INCOMING CIRCUITS	IN540B	MEJDAF
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLANE – C

SCH.REF	DESCRIPTION	TYPE	MAKE
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.RS	ENTRELEC
X92	SPARE CIRCUITS	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>									
13 49			DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-2 +R01.2											
00			DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.		
REV. NO.			DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		-		C421		CD-322930		01	





MANUFACTURING LABEL



ABB Automation Co.Ltd.

PROJECT	:	National Grid SA S/S 8709
ORDER REFERENCE	:	2875 RF S13656
YEAR OF MANUFACTURE:		2013
PANEL NO.	:	+R01.2
DRAWING NO.	:	S13656-CD-323931

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT		DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>	
00	13 04	FOR APPROVAL		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	

ASSEMBLY DRAWING

132/13.8kV GT-2 RELAY PANEL-2 +R01.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء
National Grid SA





INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322930	SHT	CONT.	01
			G04	L00	

NG/D2-D (2012/01)

DMS

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
			RELAY CUBICLE- +R01.2 ACCOMODATING THE FOLLOWING					
1	U05.5001	87T-2	NUMERICAL BIASED DIFFERENTIAL PROTECTION RELAY WITH THE FOLLOWING FEATURES RATED CURRENT : 1A OR 5A RATED FREQUENCY : 60 HZ AUXILIARY VOLTAGE : 110 – 125V DC BINARY INPUTS : 32 OUTPUT RELAYS : 16 COMMUNICATION PROTOCOL : IEC61850	501 502	1	P643	ALSTOM	P643 32 ND 6M0 040K
2	U12.5001	TS-1	TEST SWITCH FOR P633 RELAY (87T-2)	431	1	MMLG02	ALSTOM	MMLG02 R1AA 0001E
3	U12.5002	TS-2	TEST SWITCH FOR P633 RELAY (87T-2)	431	1	MMLG02	ALSTOM	MMLG02 R1AA 0001E
4	U12.5003	TS-3	TEST SWITCH FOR TRANS.MECH.PROTN	436	1	MMLG02	ALSTOM	MMLG02 R1AA 0001E
5	U16.5001	S86T2	PUSH BUTTON BLACK COLOUR, WITH 1NO+1NC CONTACTS FOR RESET OF LOCKOUT RELAY (86T2)	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102
6	U20.101	TS-4	TEST SWITCH FOR MECH PROTN.	436	1	RTXP24	ABB	RK 926 315-AS
7	U24.5001	86T2	TRIP UNIT (86T2) COMPRISING OF: TRIPPING RELAY : HIGH BURDEN TYPE AUX.VOLTAGE : 110-125V DC CONTACTS : 6NO + 4NC FLAG : HAND RESET CONTACT MECHANISM : HAND & ELECTRICALLY RESET	432	1	MVAJ105	ALSTOM	MVAJ105 RA0804A
8	U24.5002	94T2	TRIP UNIT (94T2) COMPRISING OF: AUX. VOLTAGE : 110/125V DC CONTACT DATA : 10 NO FLAG : HAND RESET CONTACT MECHANISM : SELF RESET	432	1	MVAJ101	ALSTOM	MVAJ101RA0800A

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHT.	QTY.	TYPE	MAKE	ORDER INFORMATION	
9			DUAL COIL TARGET RELAY FOR MECHANICAL PROTECTION	433	11	RXSF 1	ABB	RK 271 018-AN	
			AUXILIARY VOLTAGE : 110-125V DC	434					
			CONTACT DATA : 3NO PER COIL	435					
			FLAG : HAND RESET	436					
	U28.101	23X	A: TRANSFORMER COOLER FAIL						
		63QL-1X	B: MAIN TANK OIL LEVEL LOW ALARM						
	U28.107	630H-1X	A: MAIN TANK OIL LEVEL HIGH ALARM						
		63QL-2X	B: OLTC OIL LEVEL LOW ALARM						
	U28.301	630H-2X	A: OLTC OIL LEVEL HIGH ALARM						
		96D-1X	B: MAIN TANK PRESS RELIEF ALARM						
	U28.307	96D-2X	A: OLTC PRESS RELIEF ALARM						
		96-1X	B: BUCHLZ STAGE-1 ALARM						
	U28.113	63QP-1X	A: OLTC PROTECTIVE ALARM						
		63GD-1X	B: GAS DETECT RELAY ALARM						
	U28.313	26D-1X	A: MAIN TR OIL TEMP STAGE-1 ALARM						
		26D-2X	B: MAIN TR OIL TEMP STAGE-2 ALARM						
	U28.119	49W1-5X	A: WDG TEMP STAGE-2 ALARM (HV)						
		49W1-6X	B: WDG TEMP STAGE-2 TRIP (HV)						
	U28.319	63 QSX	A: SUDDEN PRESSURE TRIP						
		96-2X	B: BUCHLZ STAGE-2 TRIP						
	U28.125	63 QP-2X	A: OLTC TRIP PROTECTIVE RELAY TRIP						
		49W2-5X	B: WDG TEMP HIGH STAGE-1 TRIP (LV)						
	U28.325	49 W2-6X	A: WDG TEMP HIGH STAGE-2 TRIP (LV)						
		FPX	B: FIRE PROTN.						
	U28.343	96-3	A: BUCHLZ CONSERVATOR ALARM						
		96-4	B: BUCHLZ CONSERVATOR TRIP						
	U28.131	74R2	DUAL TARGET RELAY REVERSE FLAG +R2 & R3 DC/SUPPLY SPARE	432	2	RXSF 1	ABB	RK 271 019-AN	
	U28.331	74R3	AUXILIARY VOLTAGE : 110-125V DC	436					
			CONTACT DATA : 1NO + 2NC PER COIL						
			FLAG : SELF RESET						
	U28.137	96/63X	HIGH SPEED TRIP RELAY)						
	U28.143	49X	AUXILIARY VOLTAGE : 110-125V DC	436	2	RXMS 1	ABB	RK 216 463-AP	
			CONTACT DATA : 6NO						
	U28.337	T1	TIMER FOR MECHANICAL PROTECTION						
			AUXILIARY VOLTAGE : 110-125V DC	436	1	RXKL 1	ABB	1MRK 000 066-AB	
			CONTACT DATA : 2C/O						
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656				LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid SA			
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00	13 04	FOR APPROVAL	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01
REV. NO.	DATE	DESCRIPTION							

NG/D2-D (2012/01)

DMS VECTOR NGD200

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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	13		X1	BLOT CONNECTING TERMINAL BLOCKS DISCONNECTIBLE FOR CT CIRCUITS		502	45	OTTA 6T P/P	PHOENIX	0790462
			X2	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		502	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
C			X3	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		502	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X42	SPRING LOADED TERMINAL BLOCK FOR DC EXT. CIRCUITS		502	20	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		502	90	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
D			X6	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		502	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X62	KNIFE TYPE TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		502	20	M6/8.SNB	ENTRELEC	1SNA 115 688 R2500
			XTJ	SPRING LOADED TERMINAL BLOCK KNIFE FOR TELEPHONE JACK		502	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
E			XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		502	3	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XD	TERMINAL BLOCKS WITH BLOCKING DIODE, Vrrm=1kV, If=3A AND SURGE TRAP, ENERGY ABSORPTION RATING 8J (10/1000mS)		436	10	M4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270
			X92	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR SPARE CONTACTS		502	20	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
F			X53	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		502	25	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
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NG/D2-D (2012/01)
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTENTS SHEET		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>				
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			132/13.8KV GT-2 RELAY PANEL-1/2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322931	SHT 002	CONT. 011	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA							

NG/D2-D (2012/01)

DMS VECTOR

NGD200




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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT
	FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS
	FILTER		ELEMENT WITH STATIC INPUT		NEGATOR
	HIGH-PASS FILTER		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS
	BAND-PASS FILTER		ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS
	VOLTMETER		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT
	AMMETER		ELEMENT WITH DYNAMIC NEGATED INPUT		
			ELEMENT WITH INHIBITING INPUT		

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid SA</div>				
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR	132/13.8KV GT-2 RELAY PANEL-1/2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322931	012	013
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NG/D2-D (2012/01)

DMS VECTOR NGD200

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LEGENDS

±R1

±R2

±R3

±IT

FL

BB RS±

BB CBF± /CBF±

DC SUPPLY – MAIN PROTECTION

DC SUPPLY – SECONDARY PROTECTION

DC SUPPLY – BACK UP PROTECTION

DC SUPPLY – INTER TRIP

DC SUPPLY – FLASHING CIRCUIT

DC SUPPLY – BUS BAR – PROTECTION RESET

DC SUPPLY – CBF PROTECTION

R

CR

ECC

LOCAL

REMOTE

RESET BUS – ALARM SYSTEM

CONTROL ROOM

ENERGY CONTROL CENTRE

THE LOCATION OF CONTROLLED DEVICE

ANY OTHER LOCATION NOT LOCAL

ON

OFF

A

T

S

CS

CT

LS

LT

LC

LO

RO

OP

RE

CB NORMALLY OPEN AUXILIARY CONTACT

CB NORMALLY CLOSED AUXILIARY CONTACT

COMMON

TEST POSITION

SERVICE POSITION

CLOSE IN SERVICE POSITION

CLOSE IN TEST POSITION

LOCAL SERVICE

LOCAL TEST

LOCAL CLOSE

LOCAL OPEN

REMOTE OPEN

OPERATE

RESET

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE
2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
+ SIGN FOR DC + WIRE
– SIGN FOR DC – WIRE

LUGS

A. CT CIRCUITS– RING TYPE
B. OTHER CIRCUITS – SPADE TYPE

FERULLING

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 – TMSS–1, RE.0)

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NG/D2-D (2012/01)

DMS VECTOR

NGD200

A

B

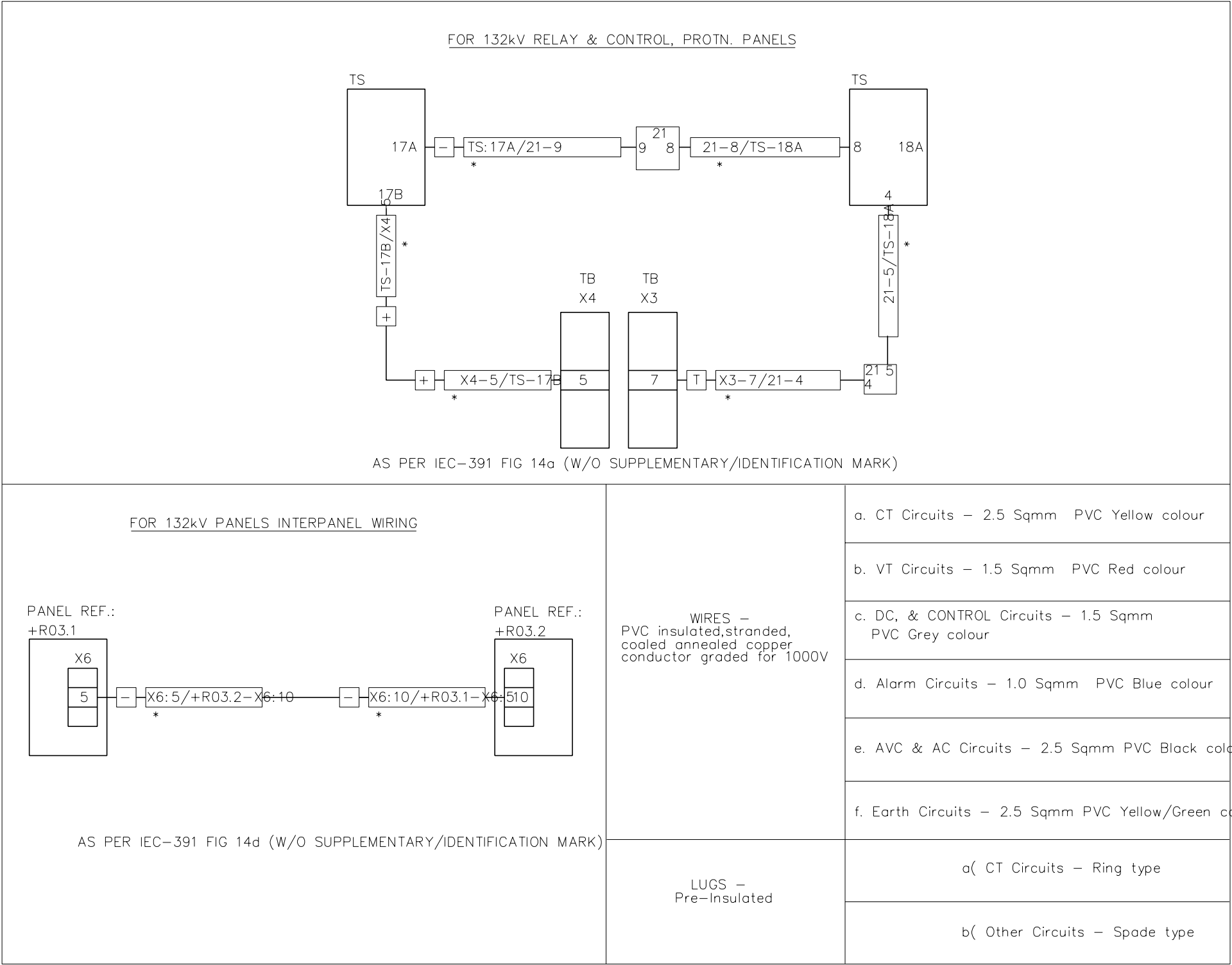
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NOTE:1 ADDITIONAL MARKING AS APPLICABLE

NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE

3.2 mm for 1.5 sq mm wires and

4.2 mm for 2.5 sq mm wires

(As per 31-TMSS-1, REV 0)

NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

FERRULE AND WIRING DETAILS	
132/13.8KV GT-2 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322931		SHT	CONT.	01
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A	<div><div><div>ABB</div><div>PROTECTION & SUBSTATION AUTOMATION</div></div><table><thead><tr><th>MANUFACTURER</th><th>SCHEMATICS DWG.NO</th><th>PANEL DESCRIPTION</th><th>PANEL REFERENCE</th></tr></thead><tbody><tr><td rowspan="2">CD-322931</td><td rowspan="2"></td><td>SS 8709 132kV RELAY PANELS</td><td></td></tr><tr><td>132/13.8kV GT-2 RELAY PANEL -1</td><td>+R01.1</td></tr><tr><td rowspan="2">CD-322931</td><td rowspan="2"></td><td>132/13.8kV GT-2 RELAY PANEL -2</td><td>+R01.2</td></tr><tr><td>132/13.8kV GT-2 RELAY PANEL -1</td><td>+R01.1</td></tr><tr><td rowspan="2">CD-322934</td><td rowspan="2"></td><td>132/13.8kV GT-2 RELAY PANEL -2</td><td>+R01.2</td></tr><tr><td>132/13.8kV GT-3 RELAY PANEL -1</td><td>+R04.1</td></tr><tr><td rowspan="2">CD-322936</td><td rowspan="2"></td><td>132/13.8kV GT-3 RELAY PANEL -2</td><td>+R04.2</td></tr><tr><td>132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL</td><td>+AVC</td></tr><tr><td rowspan="2">CD-322922</td><td rowspan="2"></td><td>132KV SPARE-1 UGF RELAY PANEL -1</td><td>+R07.1</td></tr><tr><td>132KV SPARE-1 UGF RELAY PANEL -2</td><td>+R07.2</td></tr><tr><td rowspan="2">CD-322916</td><td rowspan="2"></td><td>132KV 8020 UGF RELAY PANEL -1</td><td>+R02.1</td></tr><tr><td>132KV 8020 UGF RELAY PANEL -2</td><td>+R02.2</td></tr><tr><td rowspan="2">CD-322919</td><td rowspan="2"></td><td>132KV 8710 UGF RELAY PANEL -1</td><td>+R01.1</td></tr><tr><td>132KV 8710 UGF RELAY PANEL -2</td><td>+R01.2</td></tr><tr><td rowspan="2">CD-322925</td><td rowspan="2"></td><td>132KV SPARE-2 UGF RELAY PANEL -1</td><td>+R06.1</td></tr><tr><td>132KV SPARE-2 UGF RELAY PANEL -2</td><td>+R06.2</td></tr><tr><td>CD-323012</td><td></td><td>132KV FOIP PANEL</td><td>+FOIP</td></tr><tr><td>CD-322946</td><td></td><td>132kV BUS COUPLER-A</td><td>+R130</td></tr><tr><td>CD-322948</td><td></td><td>132kV BUS COUPLER-B</td><td>+R230</td></tr><tr><td>CD-322950</td><td></td><td>132kV BUS SECTION</td><td>+R120</td></tr><tr><td>CD-322991</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL</td><td>+BB1-1</td></tr><tr><td>CD-322993</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-2</td></tr><tr><td>CD-322995</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-3</td></tr><tr><td>CD-322997</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-4</td></tr><tr><td>CD-322999</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-5</td></tr><tr><td>CD-323001</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL</td><td>+BB2-1</td></tr><tr><td>CD-323003</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-2</td></tr><tr><td>CD-323005</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-3</td></tr><tr><td>CD-323007</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-4</td></tr><tr><td>CD-323009</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-5</td></tr></tbody></table></div>										MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE	CD-322931		SS 8709 132kV RELAY PANELS		132/13.8kV GT-2 RELAY PANEL -1	+R01.1	CD-322931		132/13.8kV GT-2 RELAY PANEL -2	+R01.2	132/13.8kV GT-2 RELAY PANEL -1	+R01.1	CD-322934		132/13.8kV GT-2 RELAY PANEL -2	+R01.2	132/13.8kV GT-3 RELAY PANEL -1	+R04.1	CD-322936		132/13.8kV GT-3 RELAY PANEL -2	+R04.2	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC	CD-322922		132KV SPARE-1 UGF RELAY PANEL -1	+R07.1	132KV SPARE-1 UGF RELAY PANEL -2	+R07.2	CD-322916		132KV 8020 UGF RELAY PANEL -1	+R02.1	132KV 8020 UGF RELAY PANEL -2	+R02.2	CD-322919		132KV 8710 UGF RELAY PANEL -1	+R01.1	132KV 8710 UGF RELAY PANEL -2	+R01.2	CD-322925		132KV SPARE-2 UGF RELAY PANEL -1	+R06.1	132KV SPARE-2 UGF RELAY PANEL -2	+R06.2	CD-323012		132KV FOIP PANEL	+FOIP	CD-322946		132kV BUS COUPLER-A	+R130	CD-322948		132kV BUS COUPLER-B	+R230	CD-322950		132kV BUS SECTION	+R120	CD-322991		132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1	CD-322993		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2	CD-322995		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3	CD-322997		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4	CD-322999		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5	CD-323001		132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1	CD-323003		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2	CD-323005		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3	CD-323007		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4	CD-323009		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5
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CD-323012												132KV FOIP PANEL	+FOIP																																																																																																									
CD-322946												132kV BUS COUPLER-A	+R130																																																																																																									
CD-322948		132kV BUS COUPLER-B	+R230																																																																																																																			
CD-322950		132kV BUS SECTION	+R120																																																																																																																			
CD-322991		132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1																																																																																																																			
CD-322993		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2																																																																																																																			
CD-322995		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3																																																																																																																			
CD-322997		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4																																																																																																																			
CD-322999		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5																																																																																																																			
CD-323001		132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1																																																																																																																			
CD-323003		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2																																																																																																																			
CD-323005		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3																																																																																																																			
CD-323007		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4																																																																																																																			
CD-323009		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5																																																																																																																			
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G	AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656			DRAWING REFERENCES		الشركة الوطنية لنقل الكهرباء National Grid sa																																																																																																																
			DRAWN BY RIZ CHECKED BY JKR		132/13.8KV GT-2 RELAY PANEL-1/2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO. REV. NO.																																																																																																												
	01	13 49	FACTORY ASBUILT		S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT	CONT.																																																																																																											
	00	13 04	FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322931	015	016																																																																																																											
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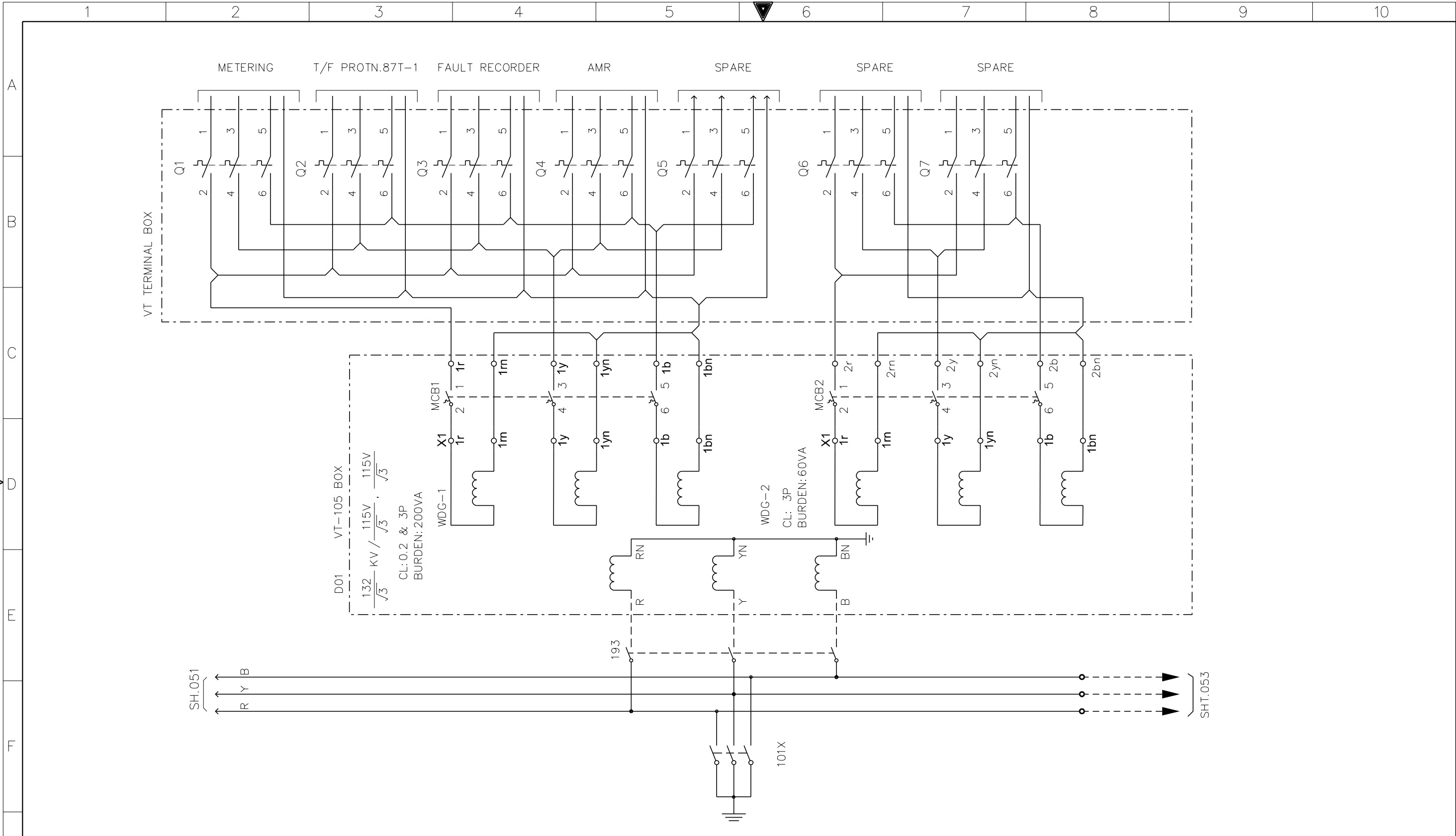
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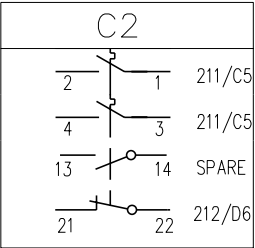
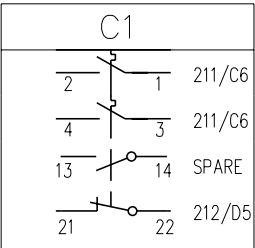
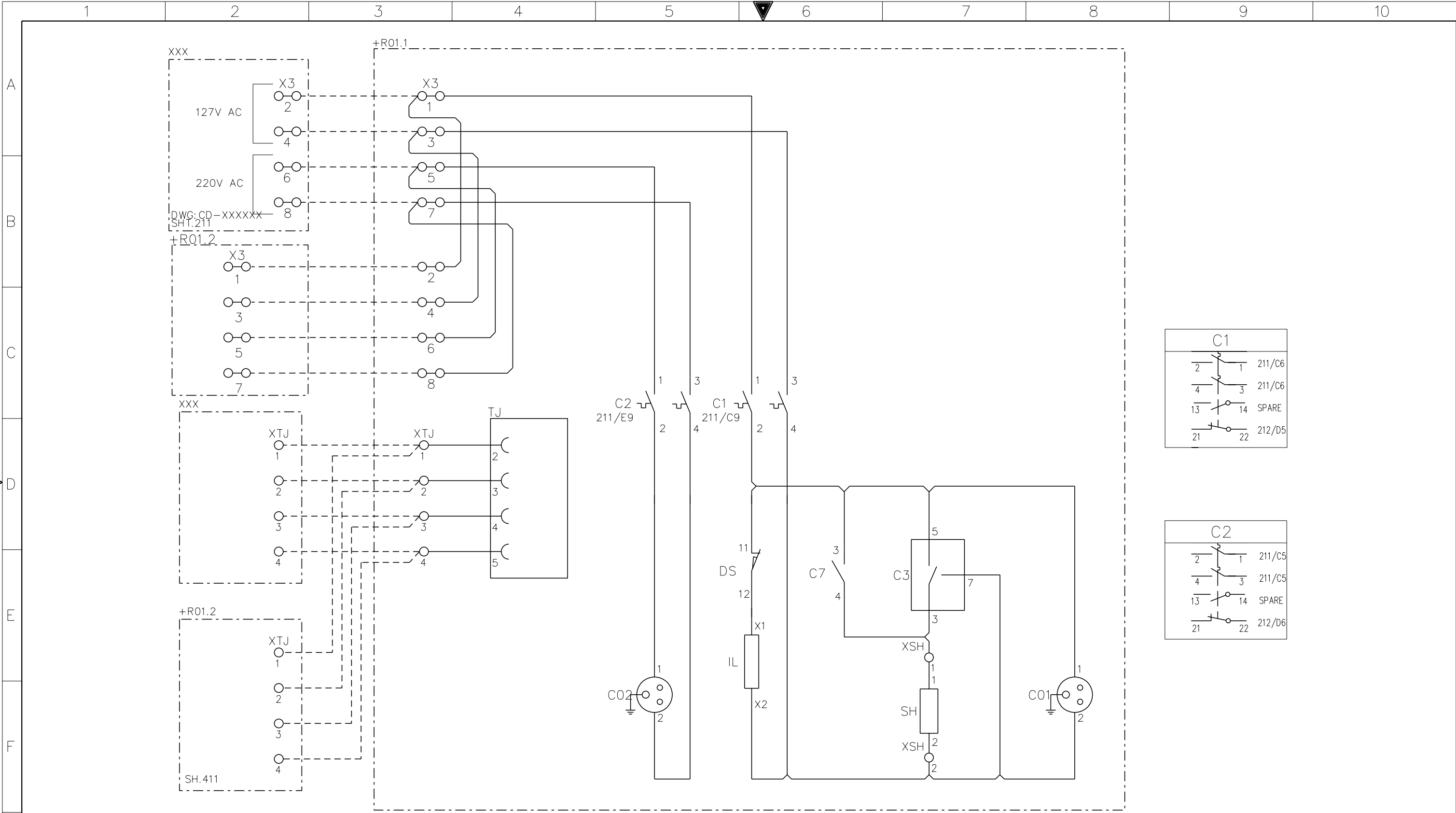
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G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">DRAWING REFERENCES</td><td colspan="2"><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid sa</div></td></tr><tr><td></td><td></td><td></td><td colspan="2">DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u></td><td colspan="3">132/13.8KV GT-2 RELAY PANEL-1/2</td><td>INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td>SHEET NO.</td><td>REV. NO.</td></tr><tr><td></td><td>01</td><td>13 49</td><td colspan="2">FACTORY ASBUILT</td><td colspan="3">DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____</td><td></td><td></td><td></td><td>SHT</td><td>CONT.</td></tr><tr><td></td><td>00</td><td>13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="3">OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u></td><td></td><td></td><td></td><td>016</td><td>051</td></tr><tr><td></td><td>REV. NO.</td><td>DATE</td><td colspan="2">DESCRIPTION</td><td colspan="3"></td><td></td><td></td><td></td><td></td><td></td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8KV GT-2 RELAY PANEL-1/2			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.		01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____						SHT	CONT.		00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>						016	051		REV. NO.	DATE	DESCRIPTION									
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>																																																																
			DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8KV GT-2 RELAY PANEL-1/2			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.																																																														
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____						SHT	CONT.																																																														
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>						016	051																																																														
	REV. NO.	DATE	DESCRIPTION																																																																							


MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02



G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		PRIMARY SYSTEM (GT-2)		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR		132/13.8KV GT-2 RELAY PANEL-1/2								
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322931		SHT	CONT.	01




G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC SUPPLY FOR ILLUMINATION & POWER SOCKET		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-1 +R01.1		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY						SHT	CONT.	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322931		211	212	01

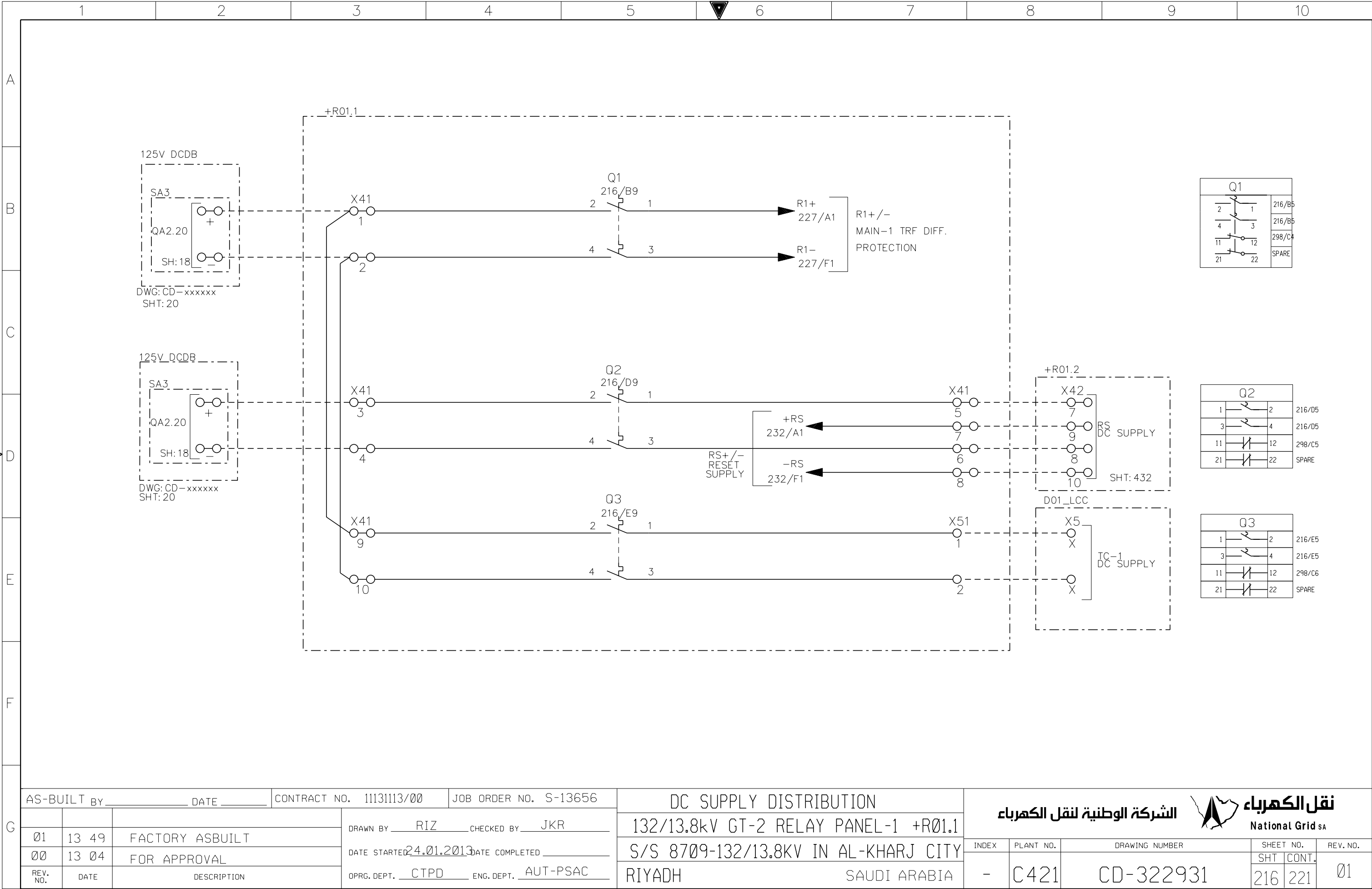
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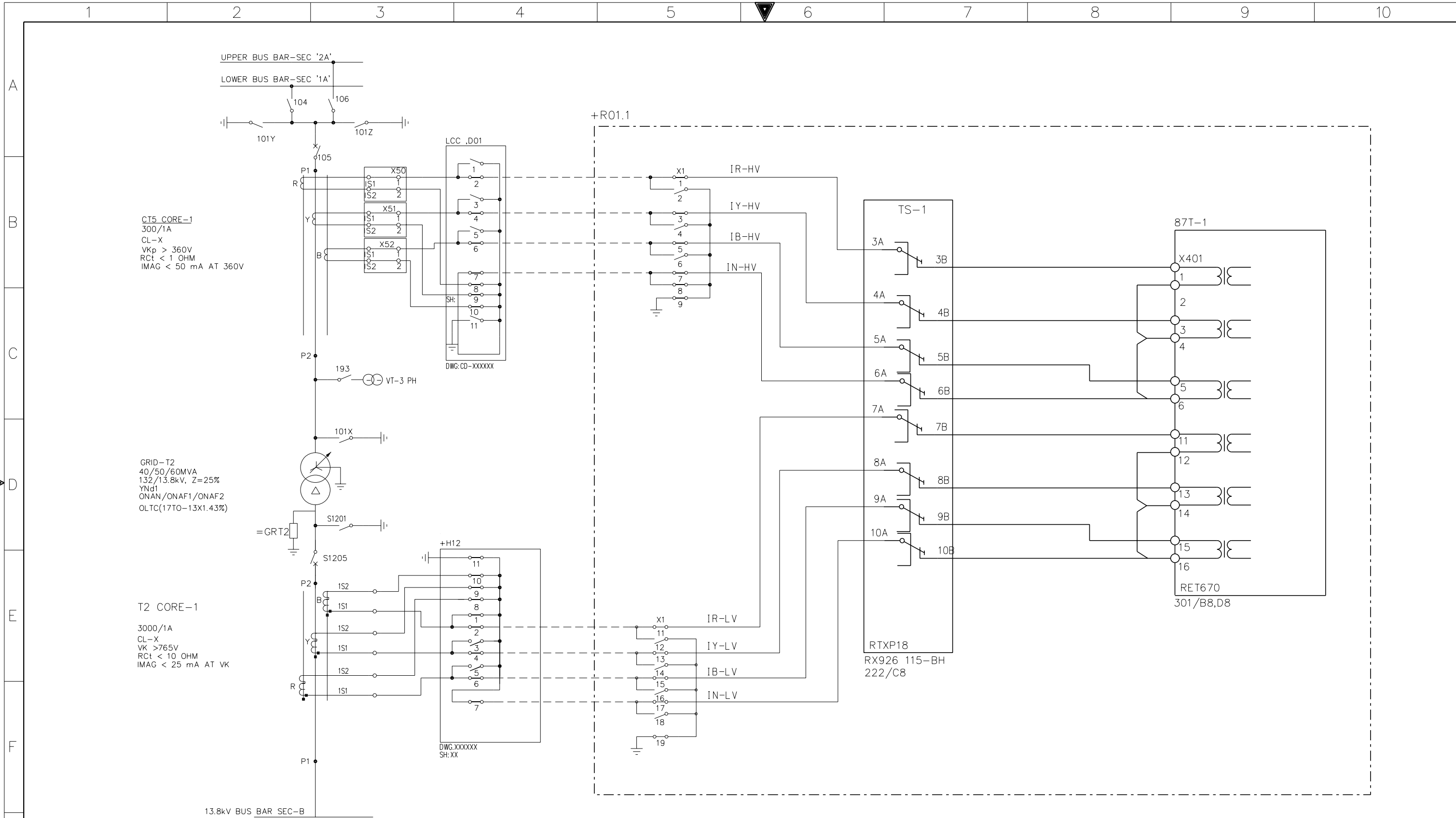
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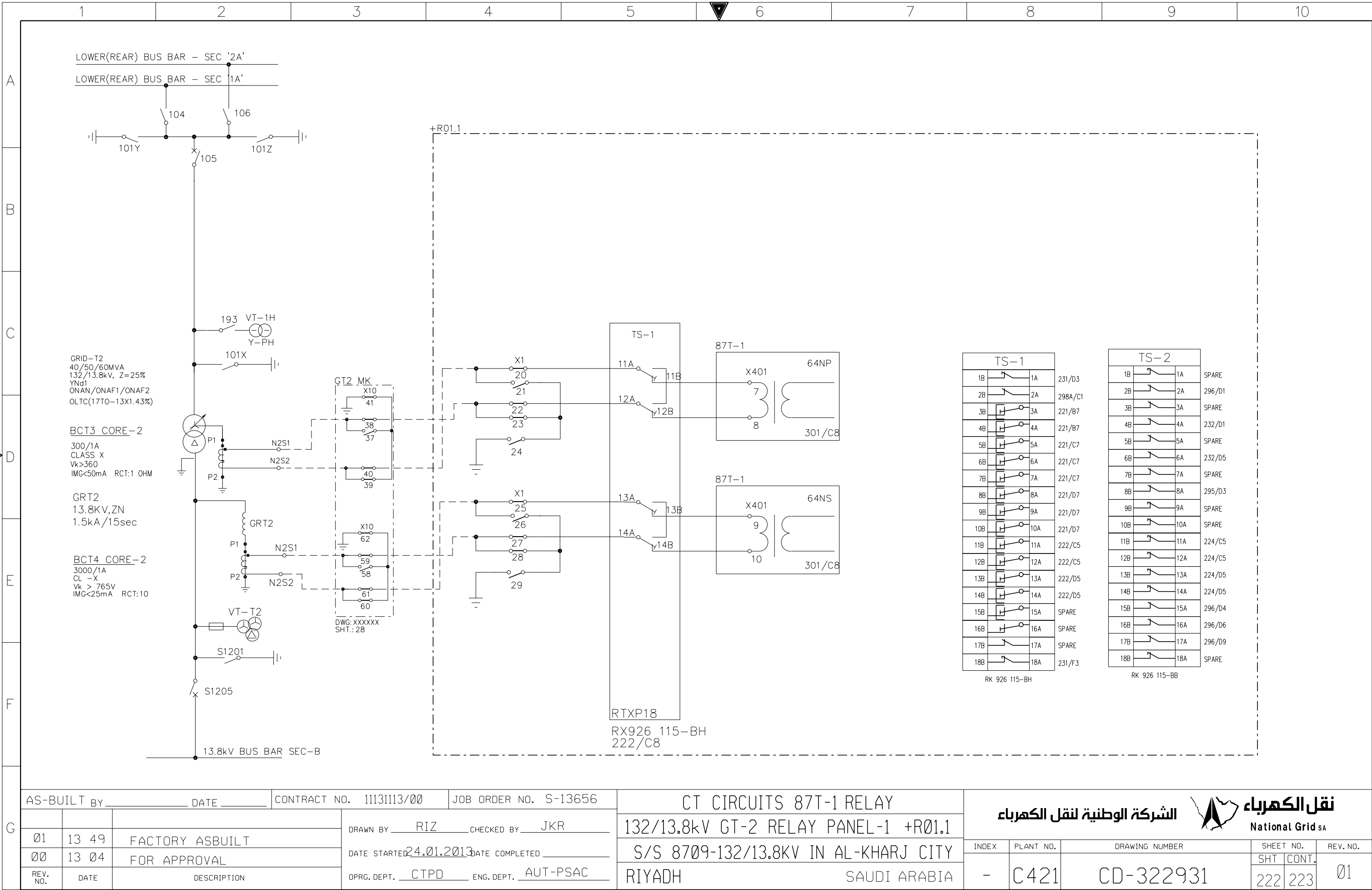
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G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CUB.LIGHTING,HEATER&SOKET ALARM CKT.				<div><div><div>الشركة الوطنية لنقل الكهرباء</div><div>National Grid sa</div></div><div><div>SHEET NO. REV. NO.</div><div>CONT.</div></div><div>01</div></div>
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			132/13.8kV GT-2 RELAY PANEL-1 +R01.1					
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY					
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA					
								-	C421	CD-322931	212 216	

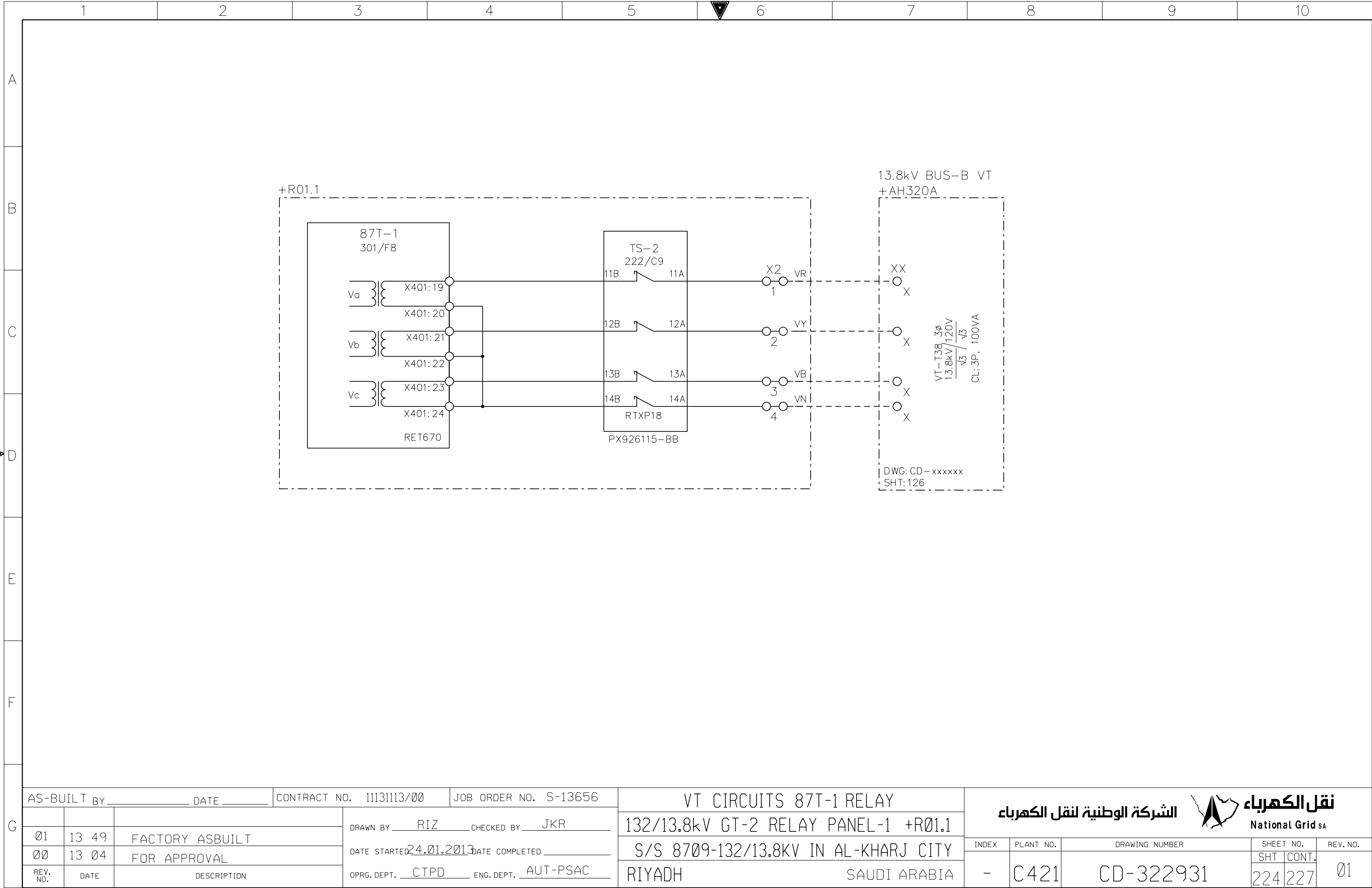


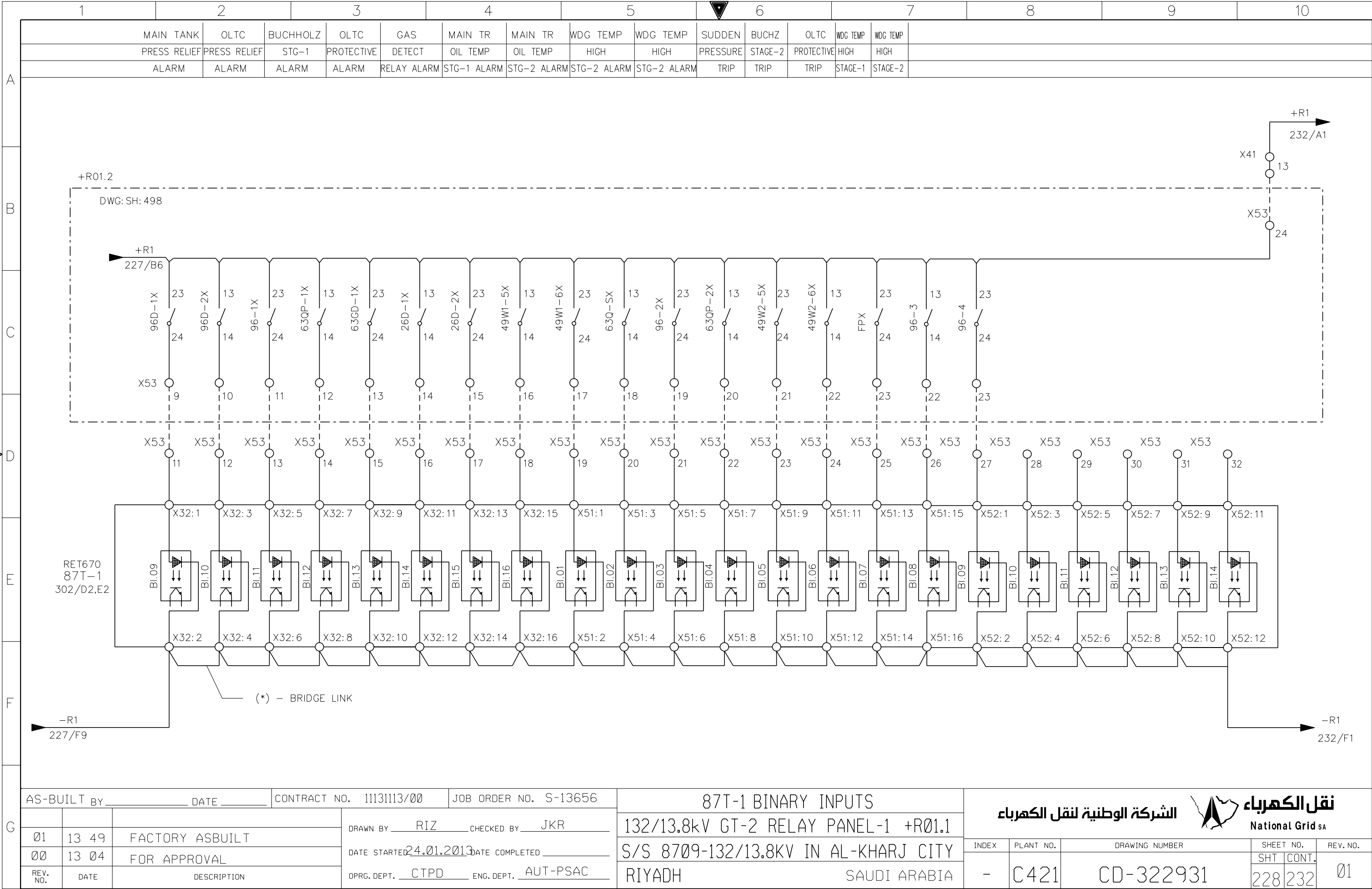


G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT CIRCUITS 87T-1 RELAY		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
				DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8kV GT-2 RELAY PANEL-1 +R01.1									
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322931		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION										221	222	



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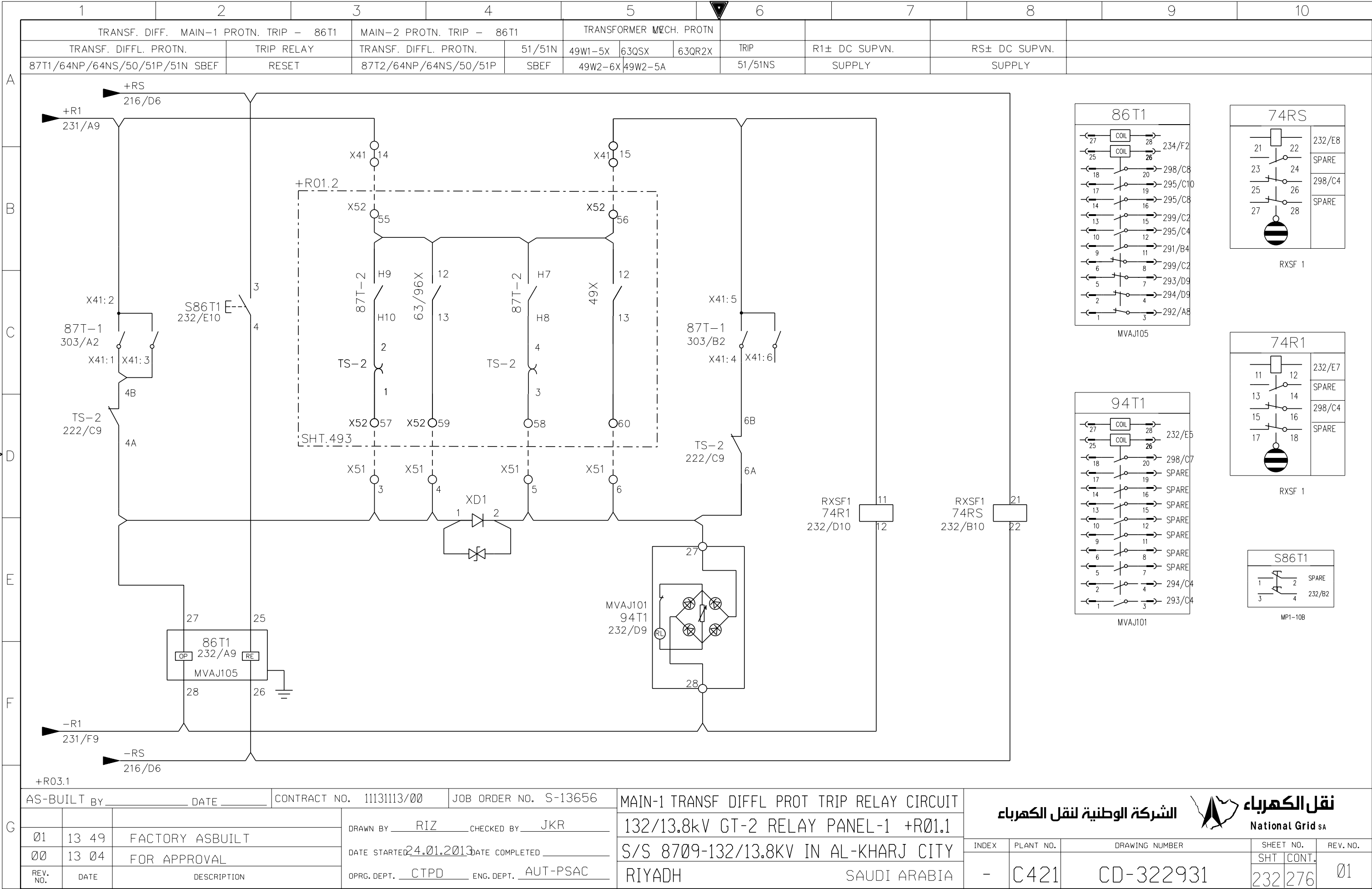


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

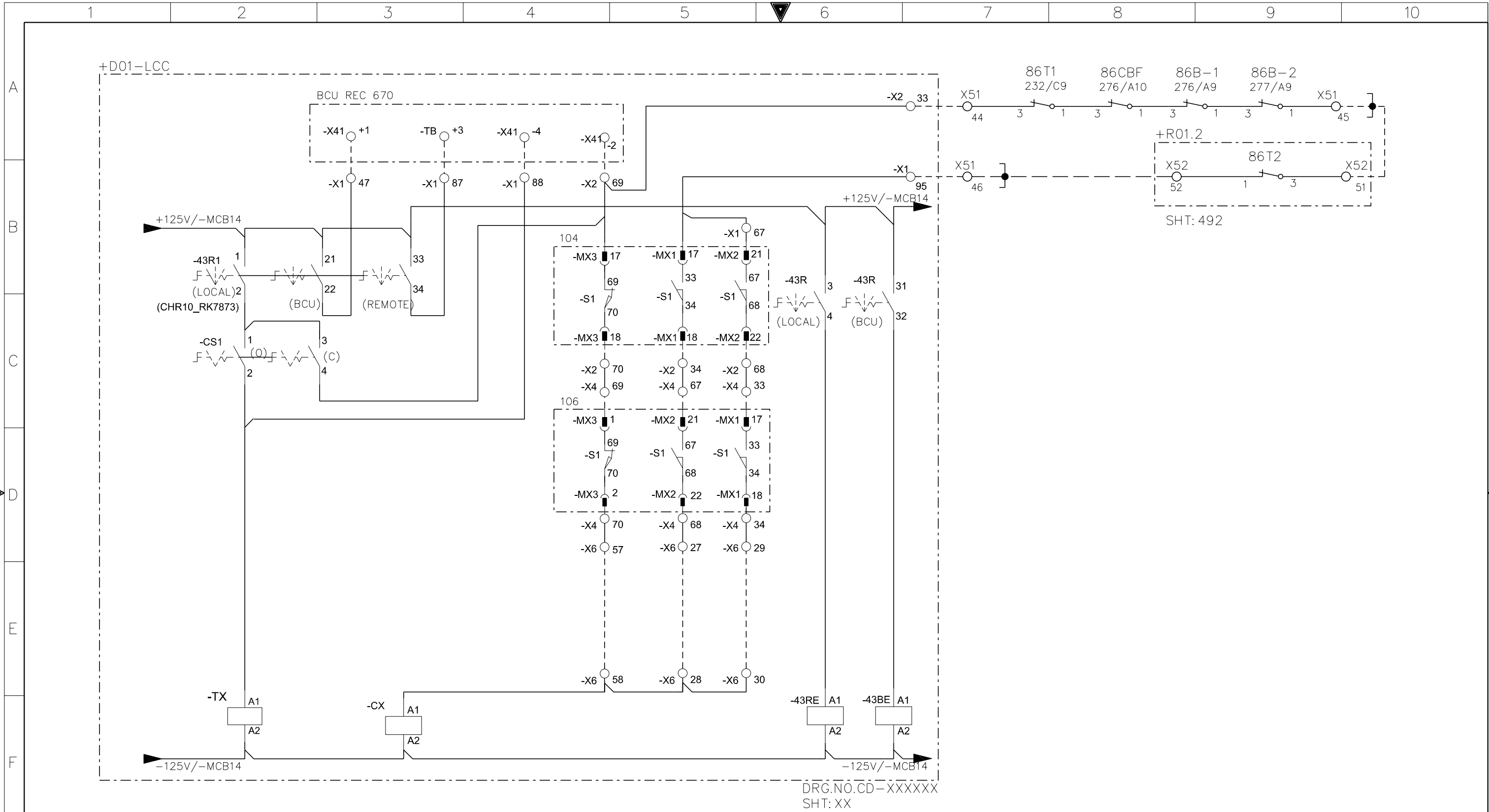
87T-1 BINARY INPUTS
132/13.8kV GT-2 RELAY PANEL-1 +R01.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322931	SHT 228	CONT. 232
			01	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-1 TRANSF DIFFL PROT TRIP RELAY CIRCUIT	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-1 +R01.1	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA	

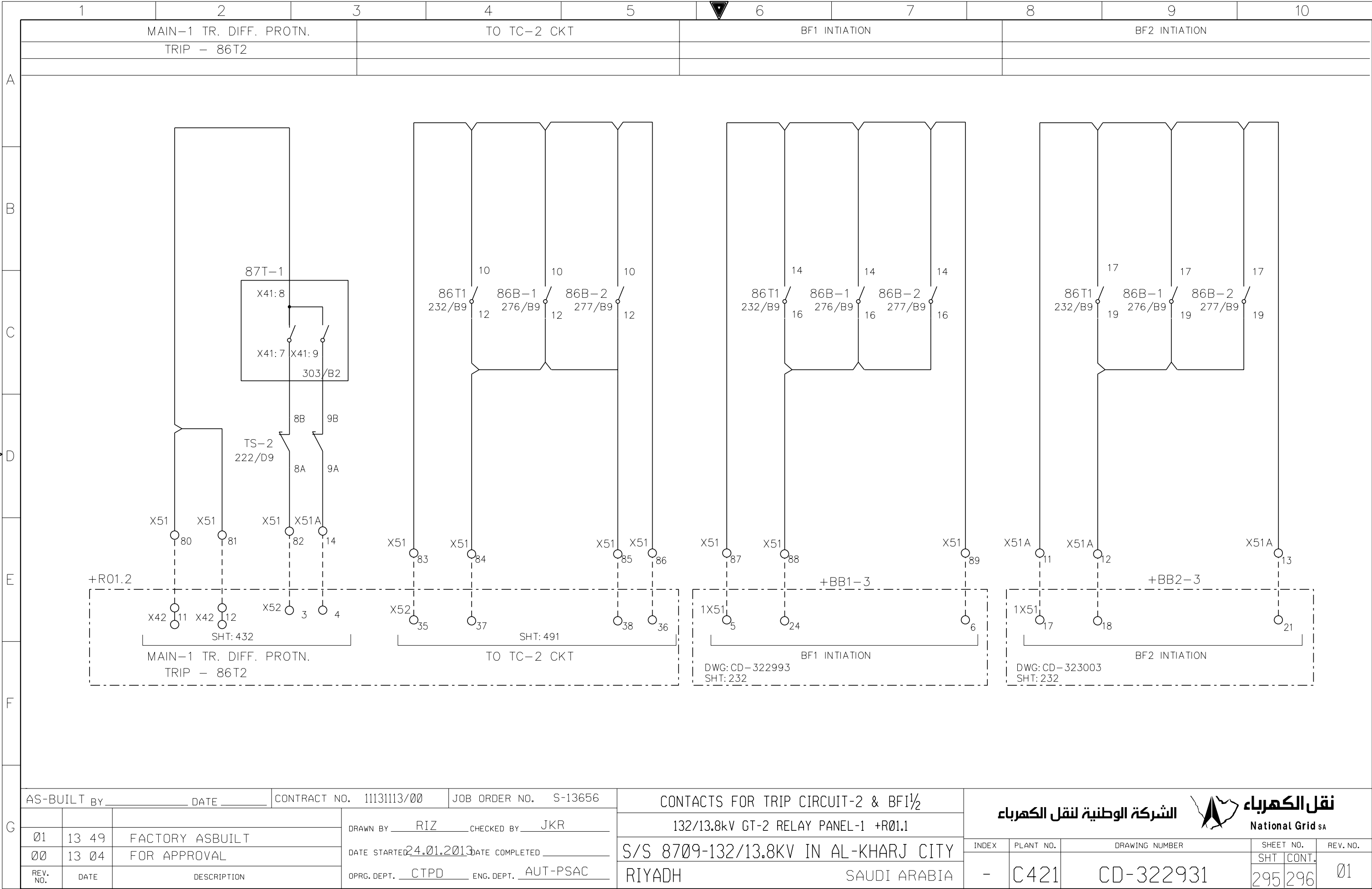
الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322931	SHT 232	CONT. 276
			01	



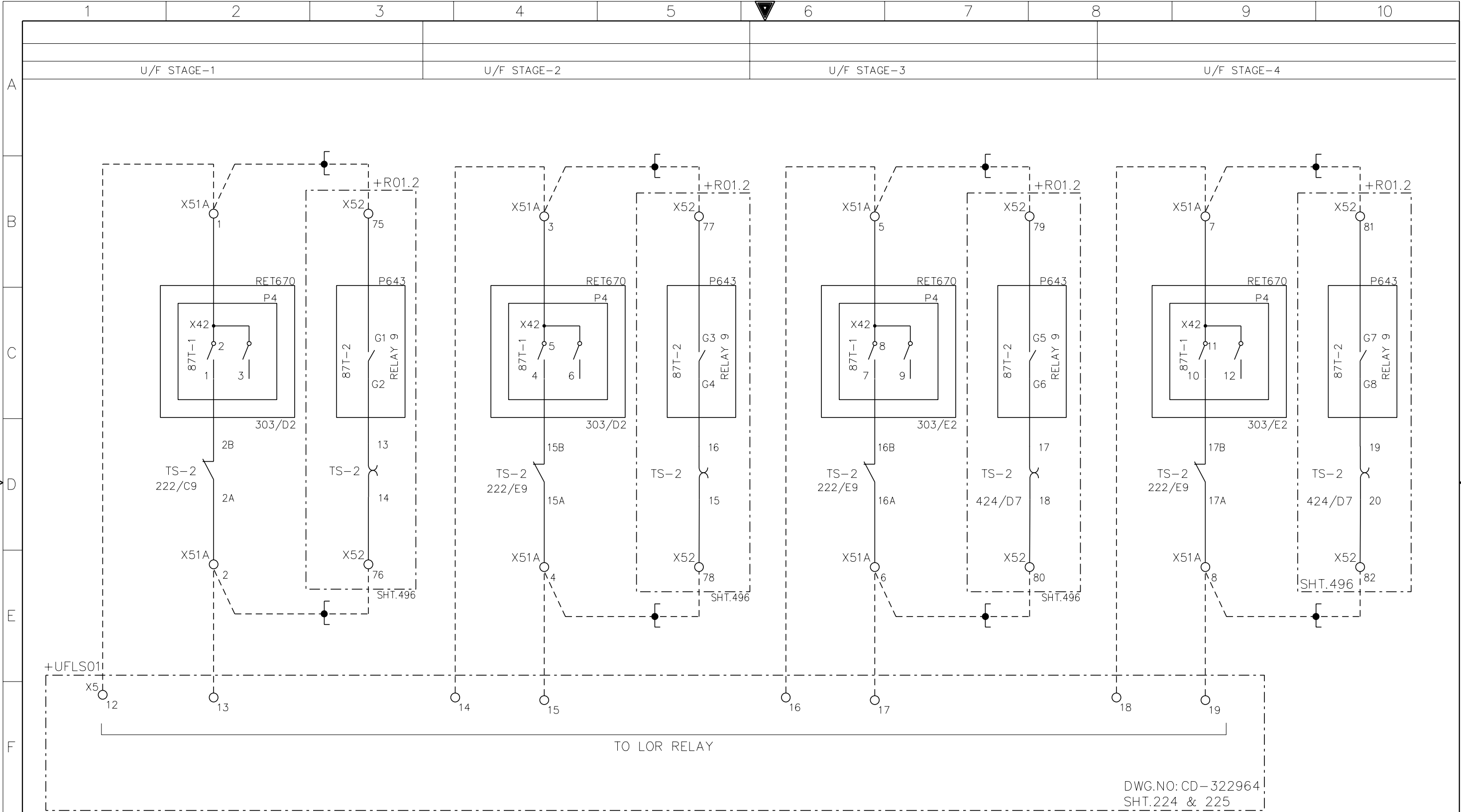
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CB K305 CLOSE BLOCK CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid SA</div>						
				DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-1 +R01.1									
	01	13 49	FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322931		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION										292	293	

	1	2	3	4	5	6	7	8	9	10
		ACSE			TRANS. LV	CBF	BUS BAR	TRANS. LV	ACSE	
		TRIP RELAY			TRIP RELAY	PROTN. TRIP RELAY	PROTN. TRIP RELAY	TRIP RELAY	BLOCK	
		86CBF	86B-1	86B-2	94T1	86CBF	86B-1,86B-2	94T2	86T1,86B-1,86B-2,86CBF,86T2	
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				TRANS. LV	CBF	BUS BAR	TRANS. LV		LV CB	
		ACSE INITIATION CKT		TRIP RELAY	PROTN. TRIP RELAY	PROTN. TRIP RELAY	TRIP RELAY		CLOSE BLOCK	
		87T-1 87T-2		94T1	86CBF	86B-1,86B-2	94T2		86T1,86B-1,86B-2,86CBF,86T2	
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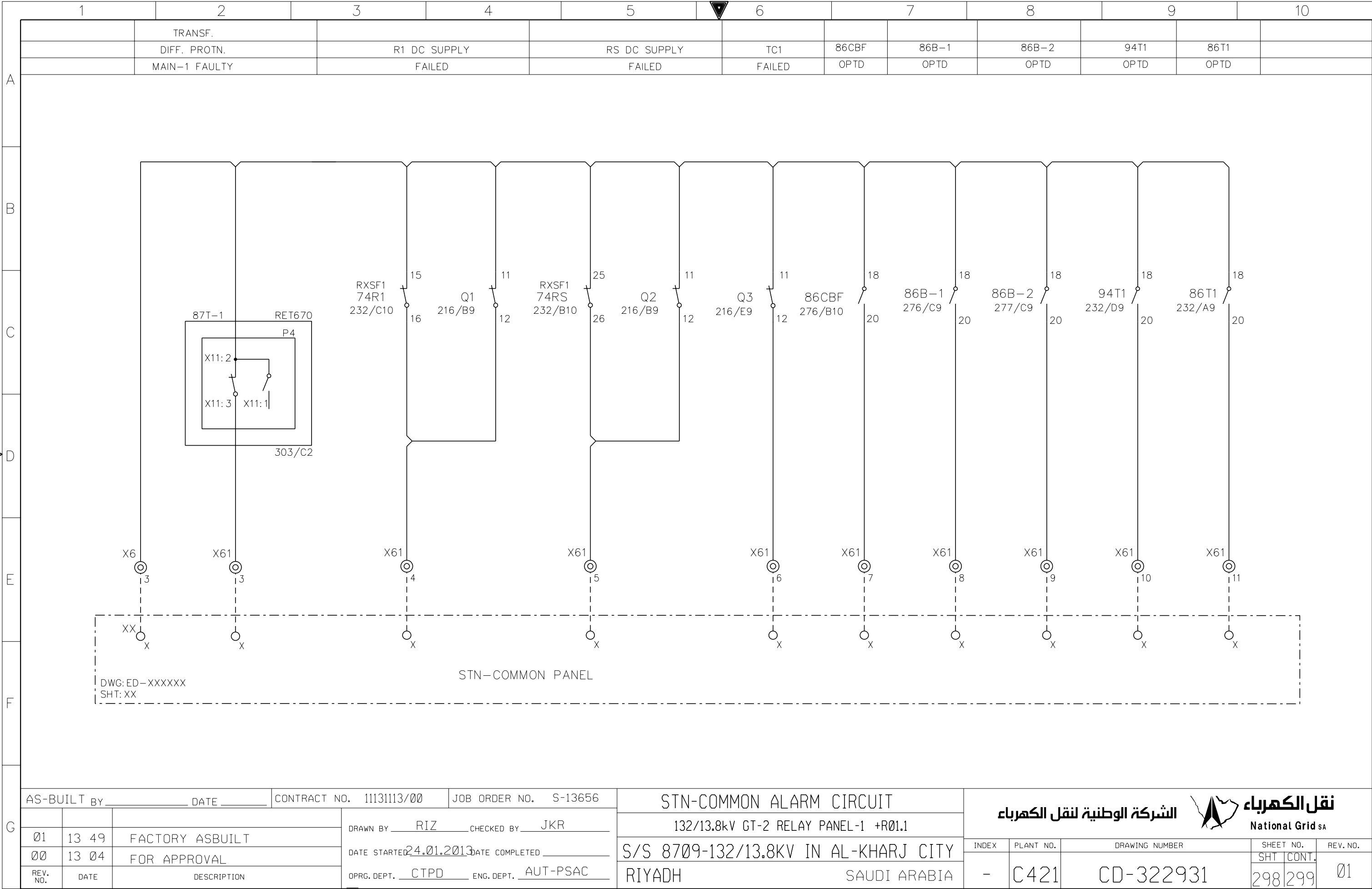


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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

CONTACTS FOR U/F LOAD SHEDDING	
132/13.8kV GT-2 RELAY PANEL-1 +R01.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
-	C421	CD-322931		SHT 296	CONT. 298 01



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

STN-COMMON ALARM CIRCUIT

132/13.8kV GT-2 RELAY PANEL-1 +R01.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



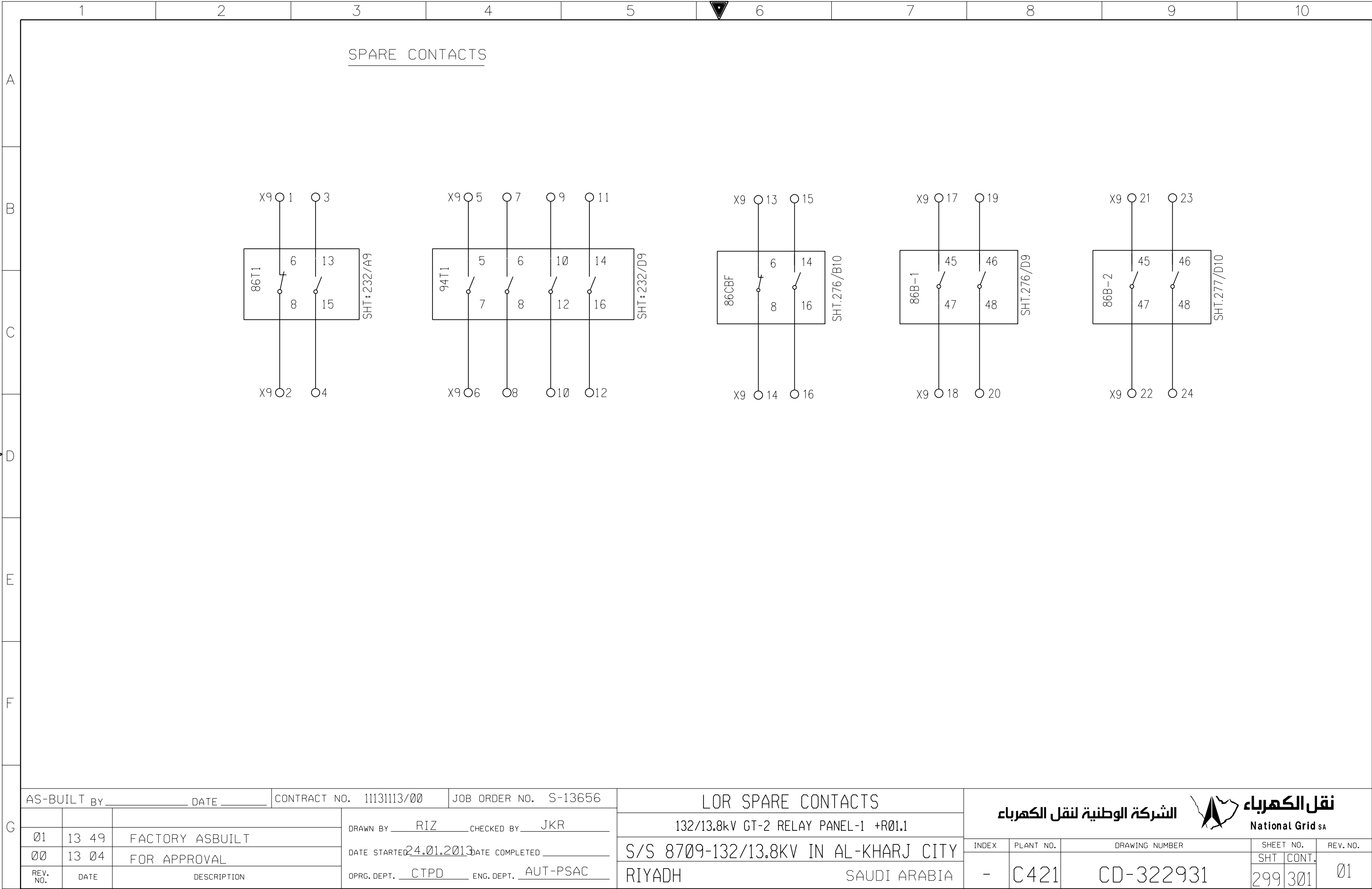
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-	C421	CD-322931	SHT 298	CONT. 299
				01

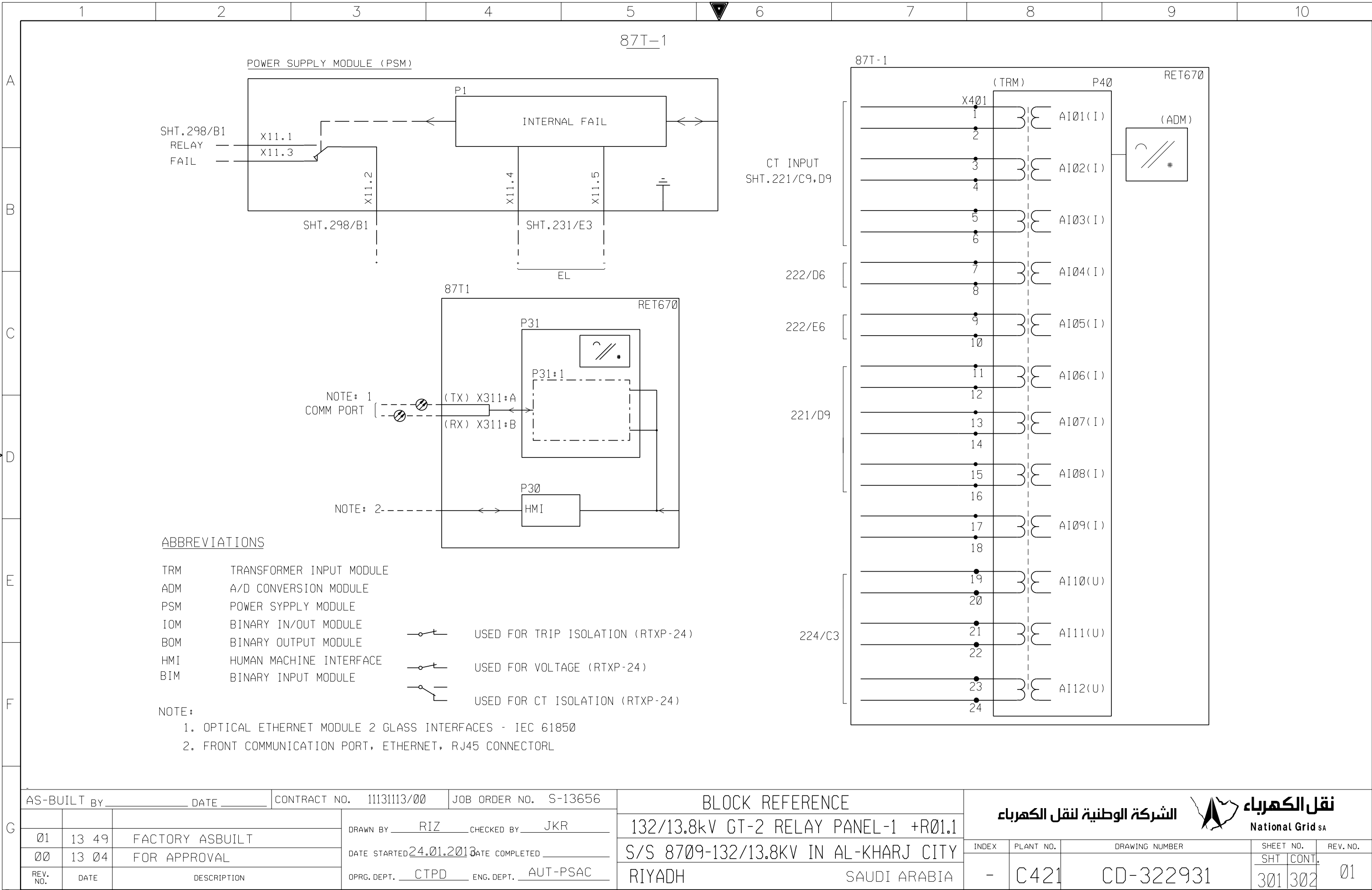
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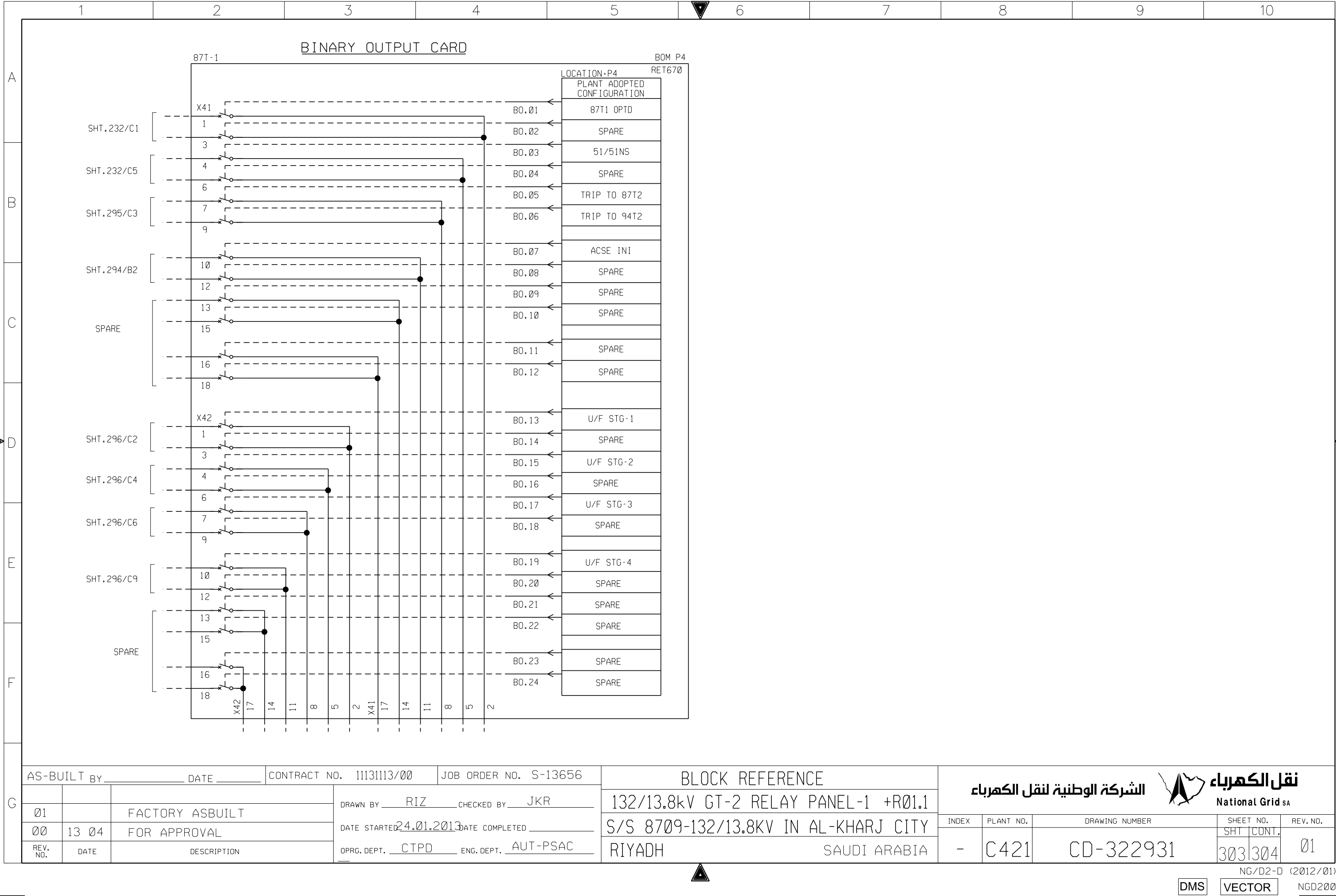


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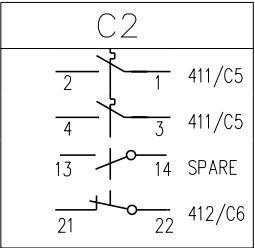
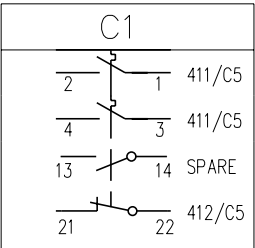
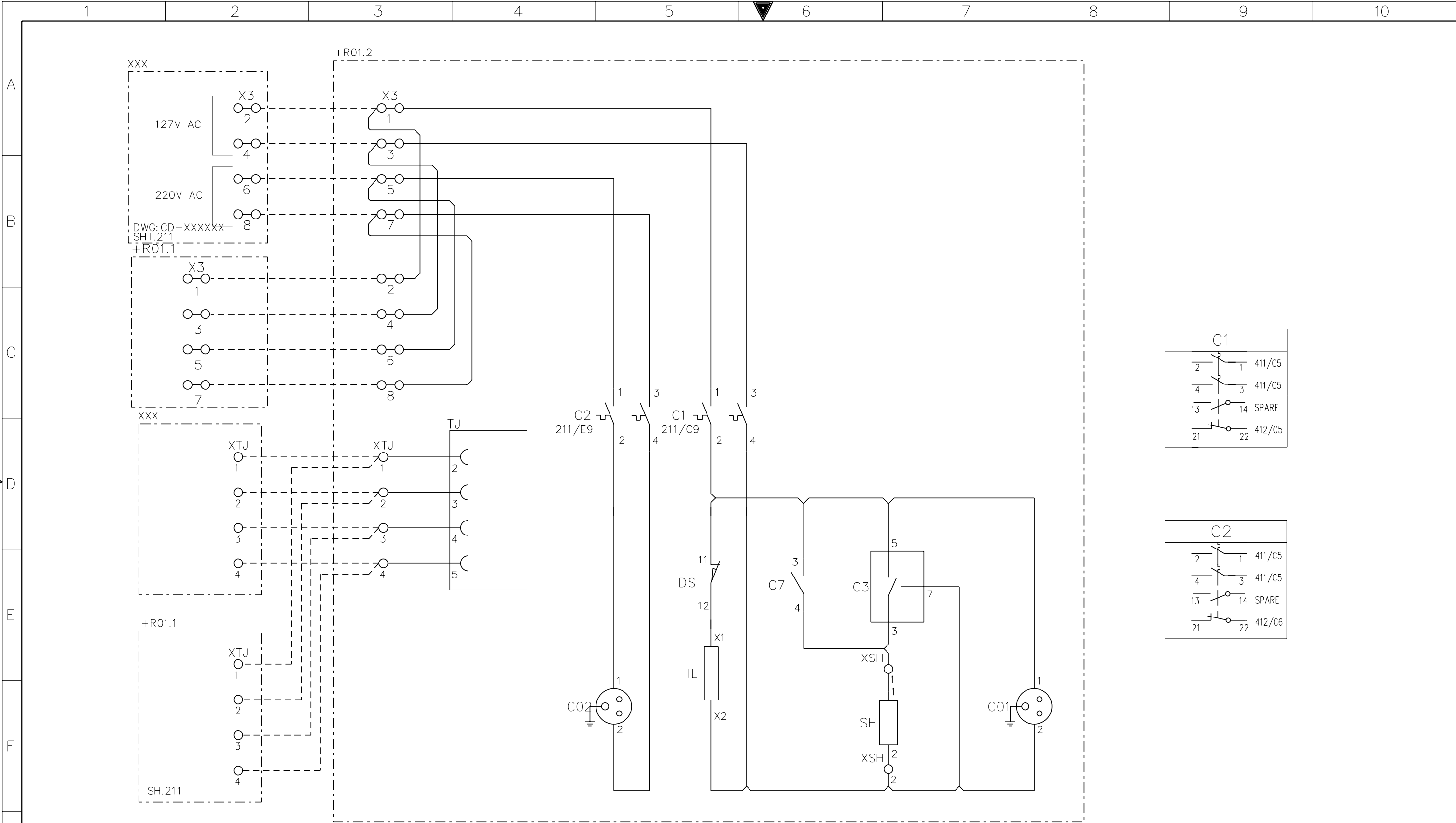
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01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

BLOCK REFERENCE	
132/13.8kV GT-2 RELAY PANEL-1 +R01.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322931	SHT 301	CONT. 302	01



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REFERENCE		X1 CT CKTS.				REFERENCE				X2 CT CKTS.				REFERENCE				XTJ T.JACK				REFERENCE				X41 DC CKTS.				REFERENCE				X51 CONTROL & PROT. CKTS				REFERENCE				X51 CONTROL & PROT. CKTS				REFERENCE				X53 CONTROL & PROT. CKTS			
221/A5		1				224/C6				1				211/D4				1				216/B3				1				216/E7				1				293/E4				51				227/D4				1			
221/B5		2				224/C6				2				211/D4				2				216/B3				2				216/E7				2				293/E6				52				227/D4				2			
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221/B5		7																				216/D7				7				SPARE				7				293/D6				57				227/D6				7			
221/B5		8																				216/D7				8				SPARE				8				293/E9				58				227/D6				8			
221/B5		9																				SPARE				9				SPARE				9				293/E9				59				SPARE				9			
221/B5		10																				SPARE				10				SPARE				10				293/E10				60				SPARE				10			
221/E5		11				211/A3				1				212/B3				2				227/B4				11				276/A2				11				293/B9				61				228/D2				11			
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221/E5		13				211/C3				3				298/E2				3				228/B10				13				276/F8				13				294/E1				63				228/D2				13			
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221/F5		17				211/C3				7				298/E6				7				SPARE				17				276/A8				17				294/D2				67				228/D4				17			
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222/C4		20				SPARE				10				SPARE				10				SPARE				20				276/E2				20				294/D6				70				228/D5				20			
222/C4		21																				276/A4				21				276/E4				21				294/B7				71				228/D6				21			
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222/E4		27																				276/E6				27				276/E6				27				294/E9				78				228/D8				28			
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222/E4		29																				276/E6				29				276/E6				29				295/E2				80				228/D9				30			
SPARE		30																				276/E6				30				276/E6				30				295/E2				81				228/D9				31			
223/E5		31																				276/E6				31				276/E6				31				295/E3				82				228/D9				32			
223/E5		32																				276/E6				32				276/E6				32				295/E3				83				SPARE				33			
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SPARE		37																				276/E6				37				276/E6				37				295/E6				88											
SPARE		38																				276/E6				38				276/E6				38				295/E7				89											
SPARE		39																				276/E6				39				276/E6				39				SPARE				90											
SPARE		40																				276/E6				40				276/E6				40				SPARE				91											
SPARE		41																				276/E6				41				276/E6				41				SPARE				92											
SPARE		42																				276/E6				42				276/E6				42				SPARE				93											
SPARE		43																				276/E6				43				276/E6				43				SPARE				94											
SPARE		44																				276/E6				44				276/E6				44				SPARE				95											
SPARE		45																				276/E6				45				276/E6				45				SPARE				96											
SPARE		46																				276/E6				46				276/E6				46				SPARE				97											
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SPARE		49																				276/E6				49				276/E6				49				SPARE															
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AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656																																																					
DRAWN BY _____ RIZ _____ CHECKED BY _____ JKR																																																					
DATE STARTED 24.01.2013 DATE COMPLETED _____																																																					
OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC																																																					
TERMINAL BLOCK REFERENCE																																																					
132/13.8kV GT-2 RELAY PANEL-1 +R01.1																																																					
S/S 8709-132/13.8KV IN AL-KHARJ CITY																																																					
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- C421 CD-322931 304 411 01																																																					




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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

AC SUPPLY FOR ILLUMINATION & POWER SOCKET					
132/13.8kV GT-2 RELAY PANEL-2 +R01.2					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء



National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322931	SHT 411	CONT. 412	01

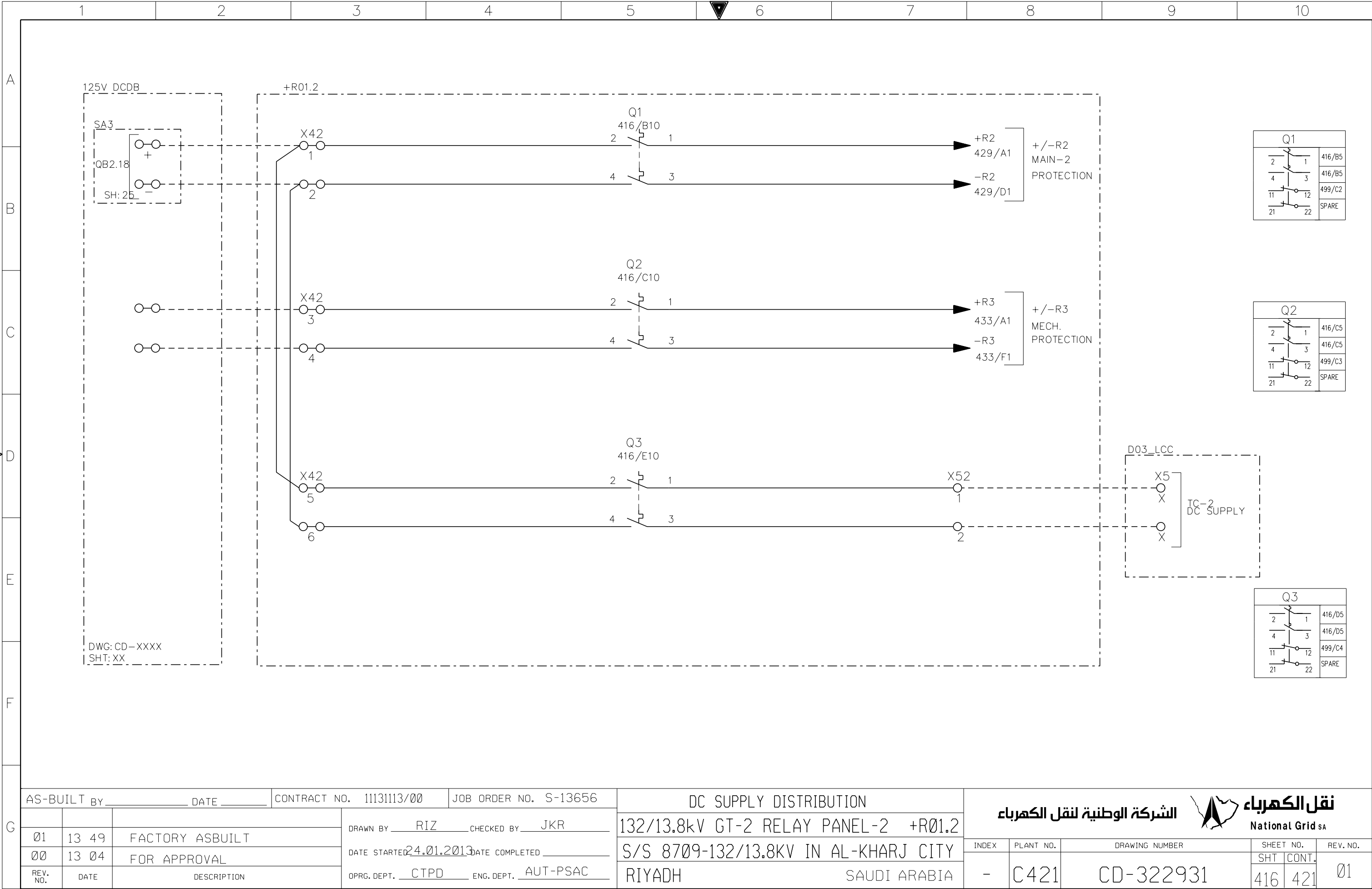
NG/D2-D (2012/01)

DMS

VECTOR

NGD200





AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

DC SUPPLY DISTRIBUTION

132/13.8kV GT-2 RELAY PANEL-2 +R01.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

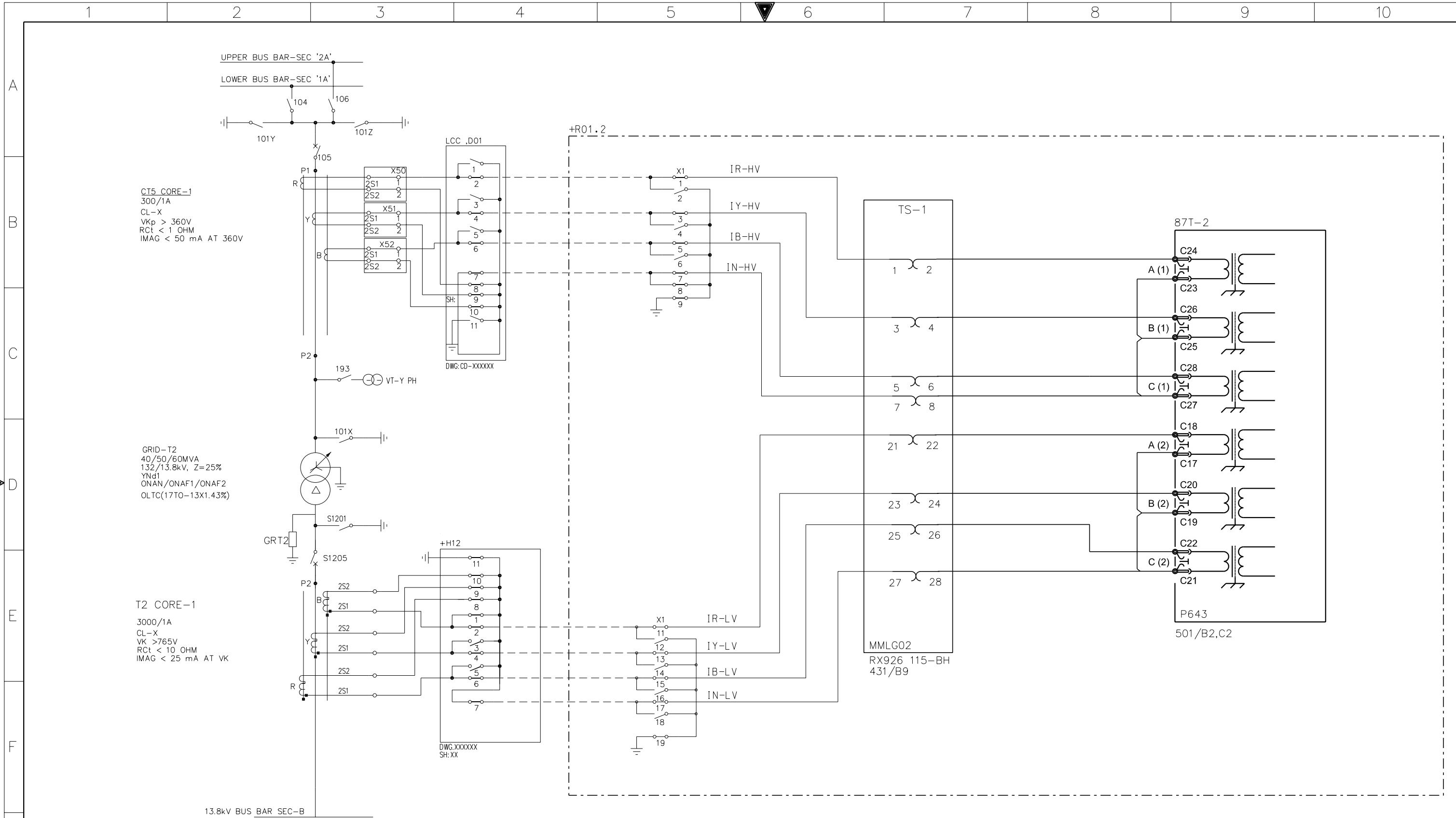
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

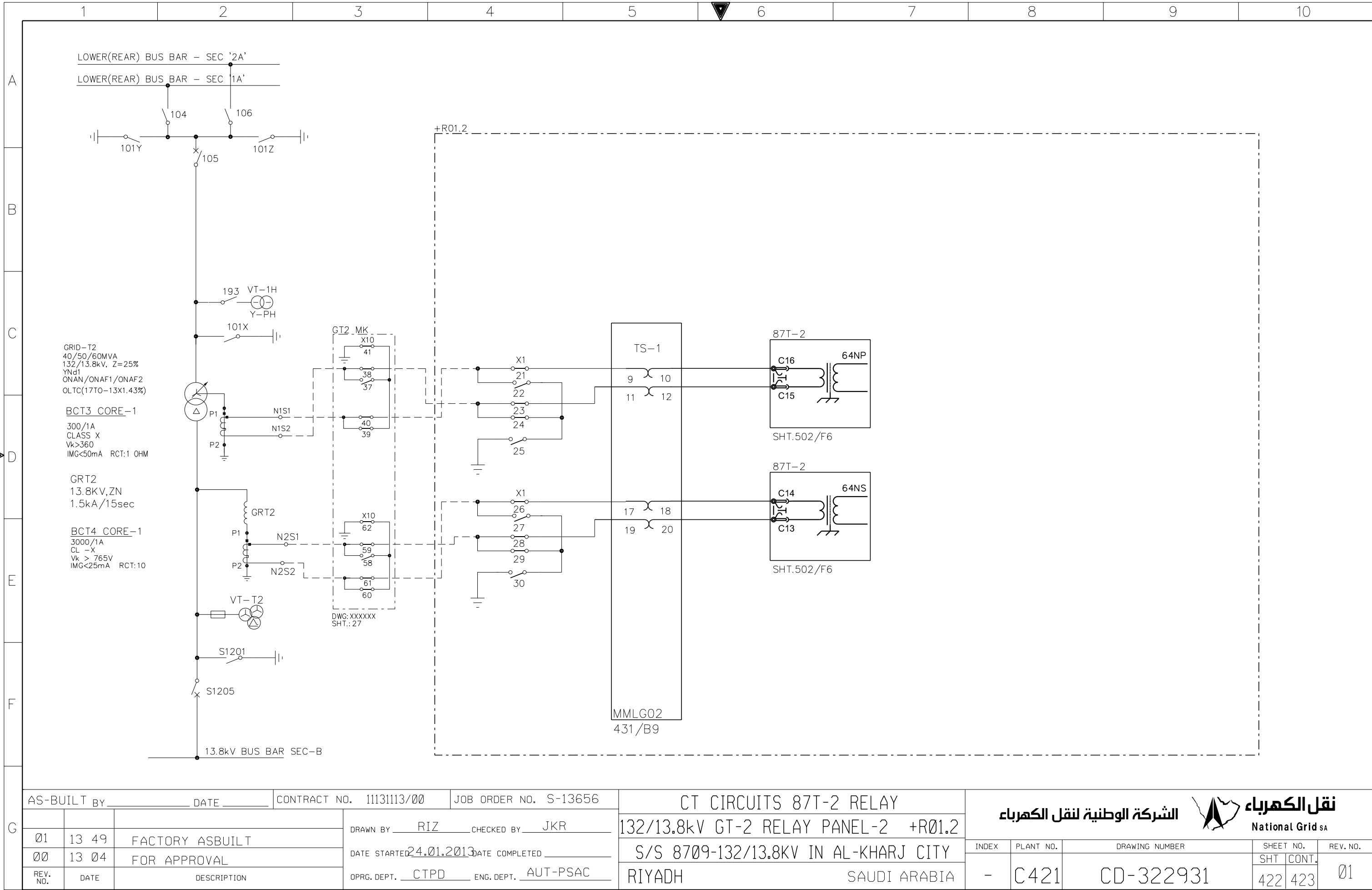
نقل الكهرباء

National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322931	SHT 416 CONT. 421	01

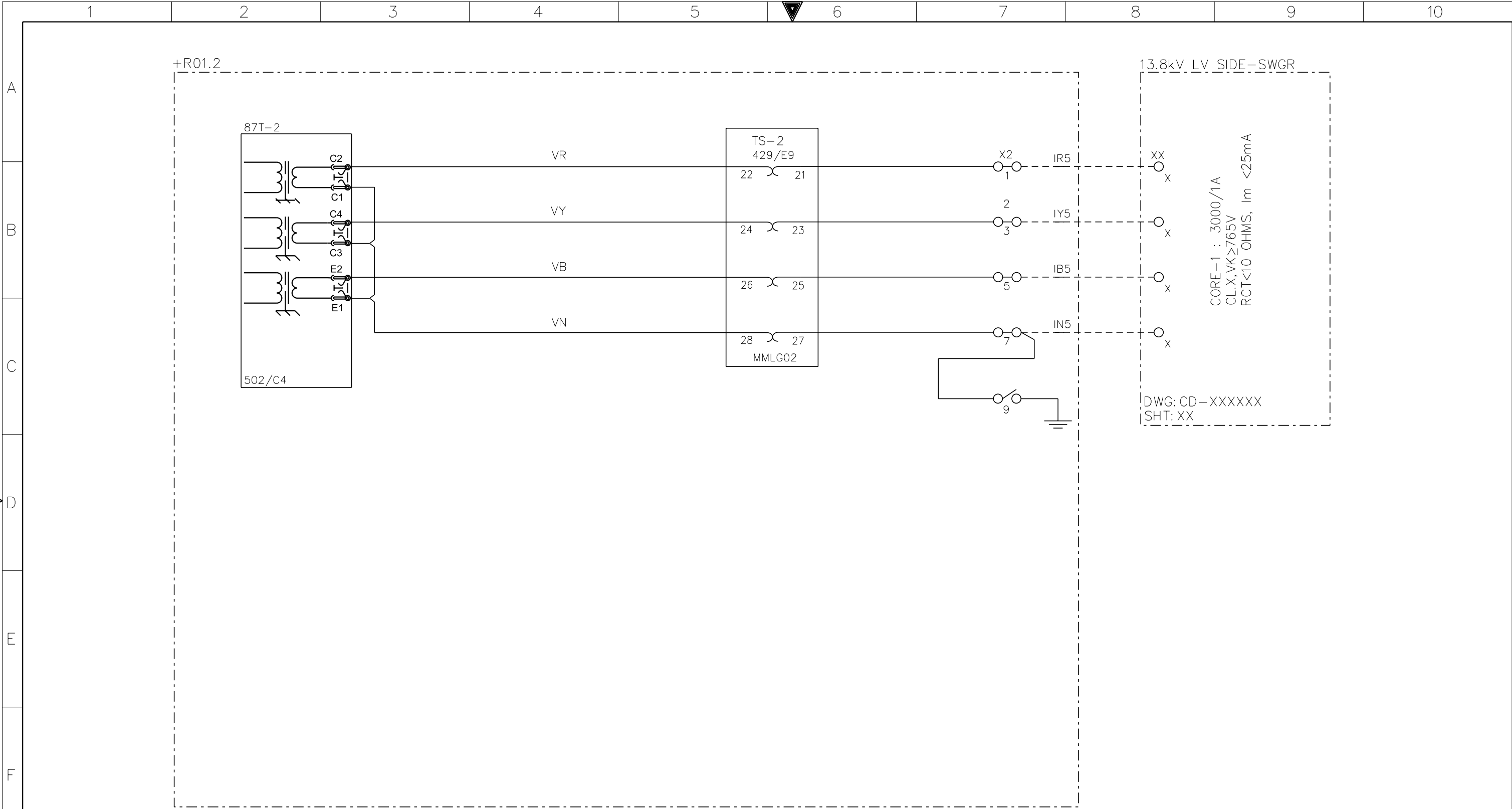



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT CIRCUITS 87T-2 RELAY		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					
				DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-2 +R01.2						
	01	13 49	FACTORY ASBUILT		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY					
	00	13 04	FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA					
	REV. NO.	DATE	DESCRIPTION						INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
								-	C421	CD-322931		SHT	CONT.	01
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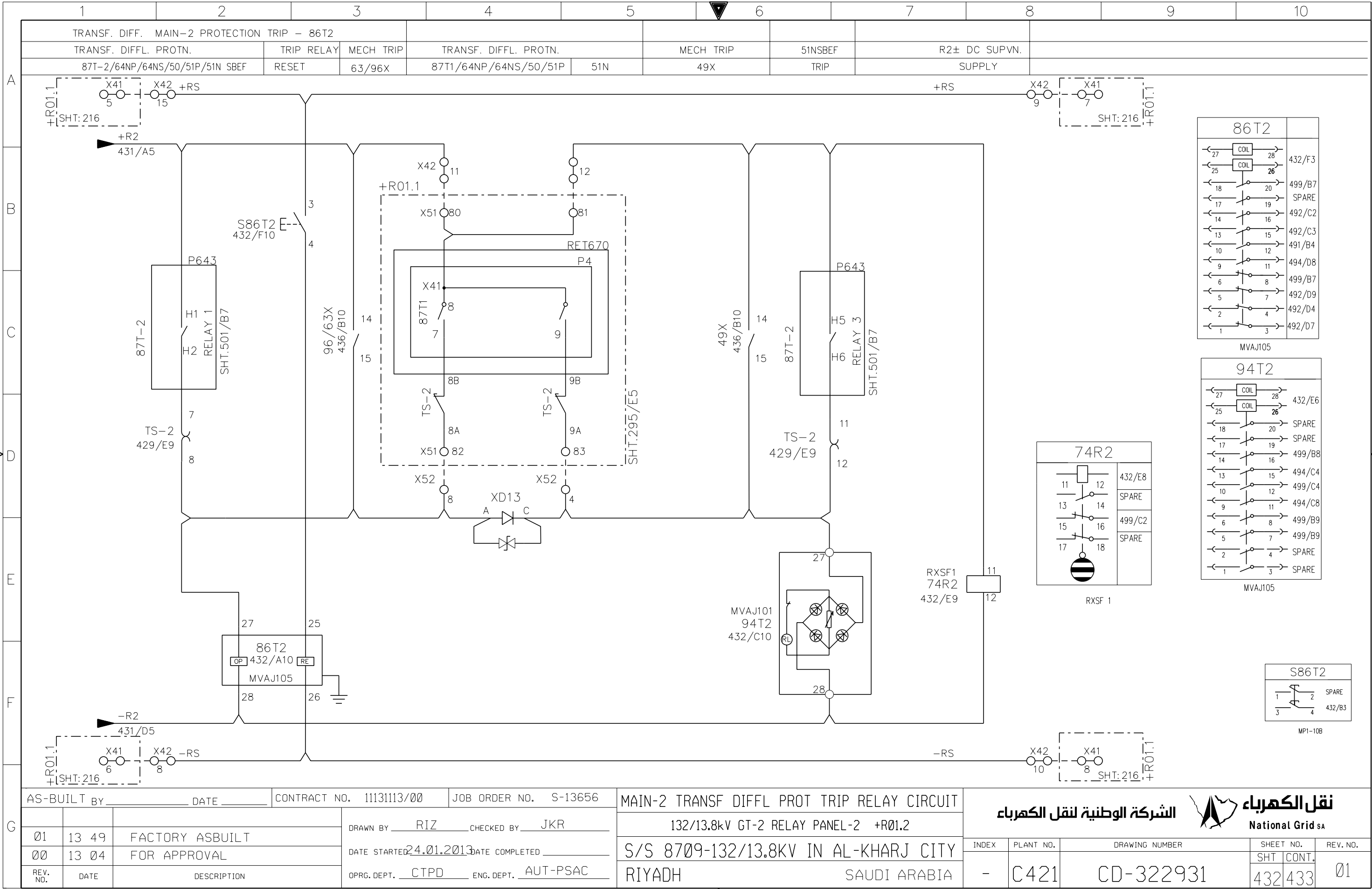


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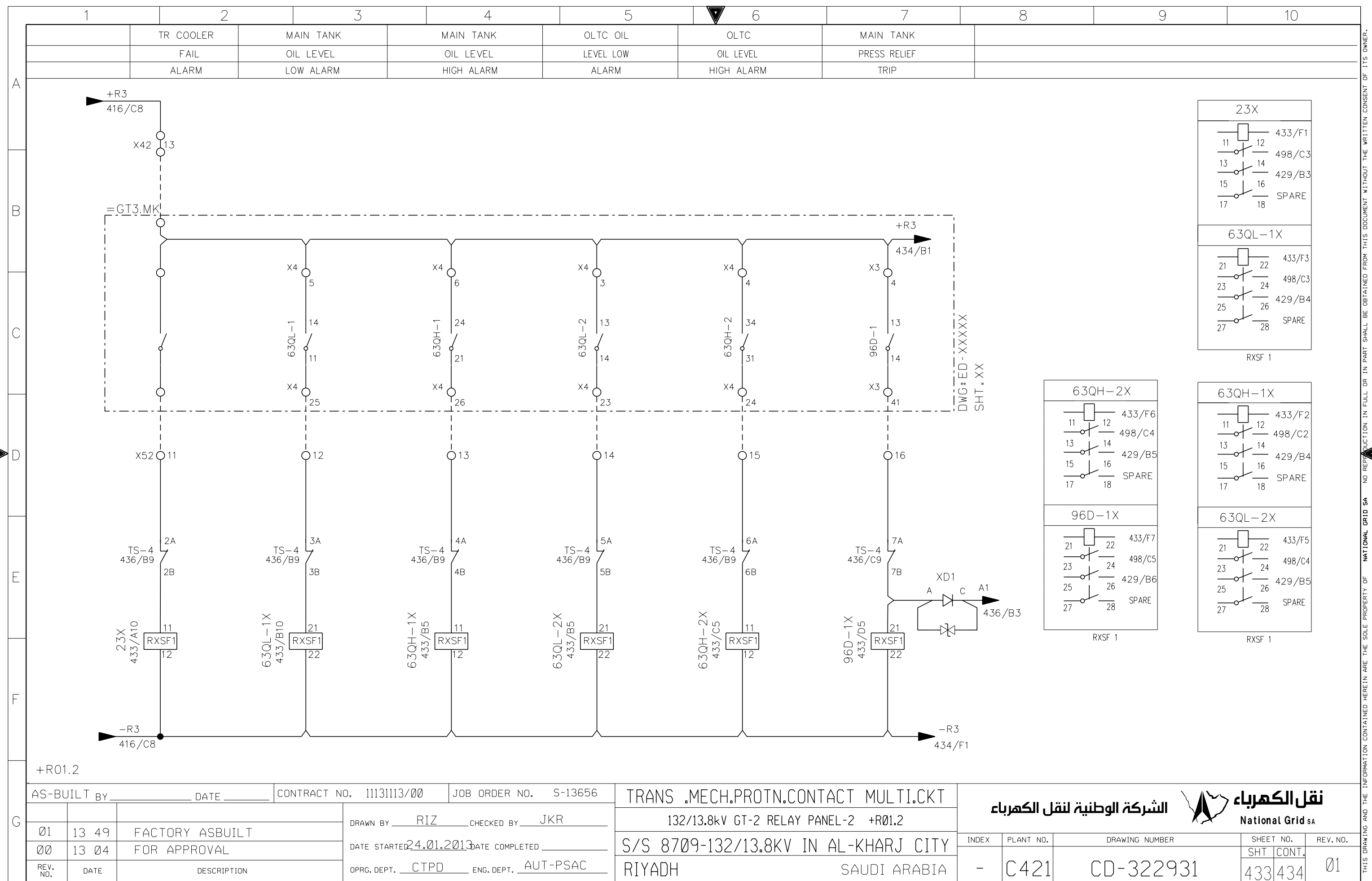


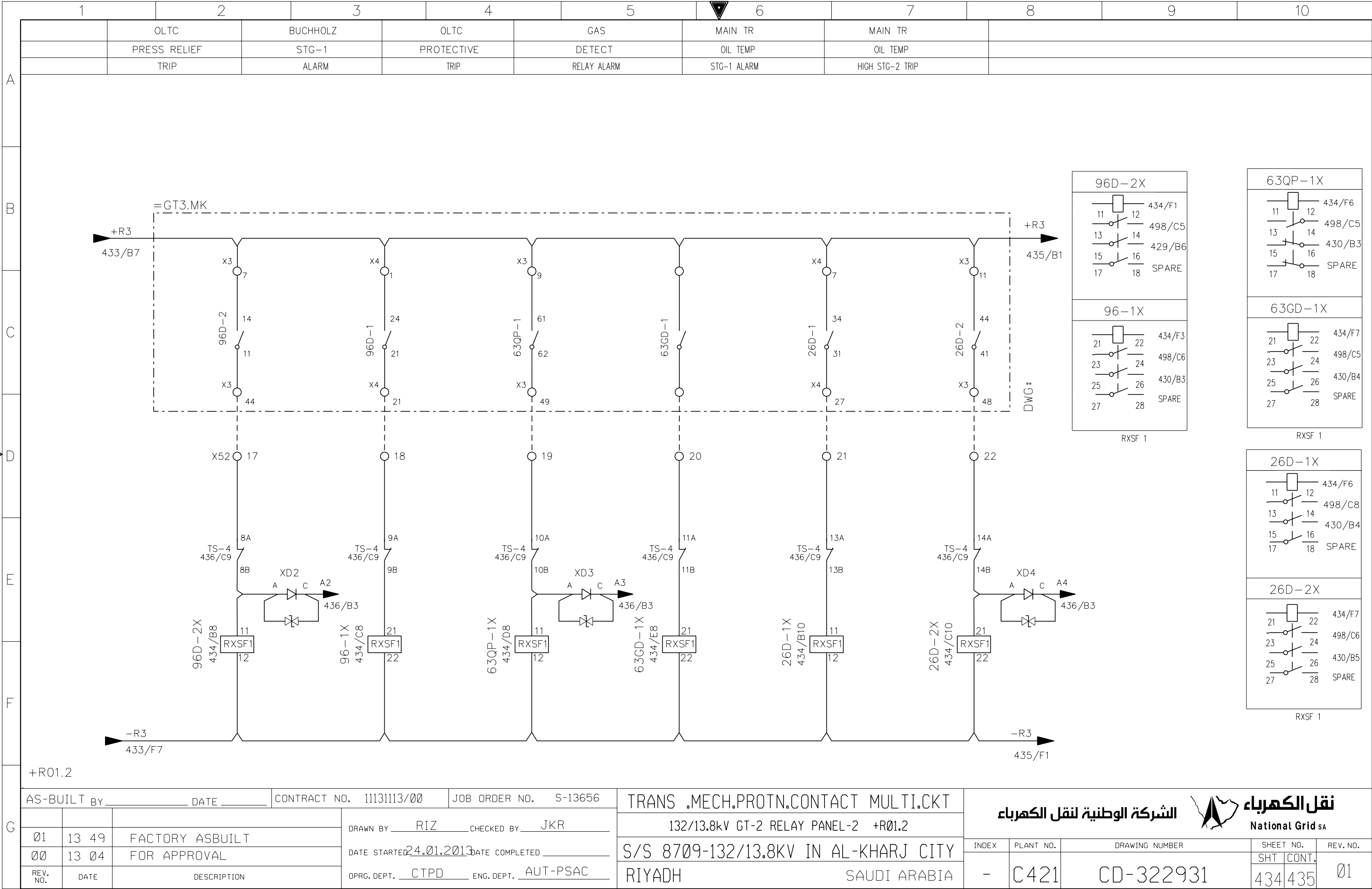


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT & VT CIRCUITS 87T-2 RELAY			<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>					
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-2 +R01.2								
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			-	C421	CD-322931		SHT 424	CONT. 429
														01	



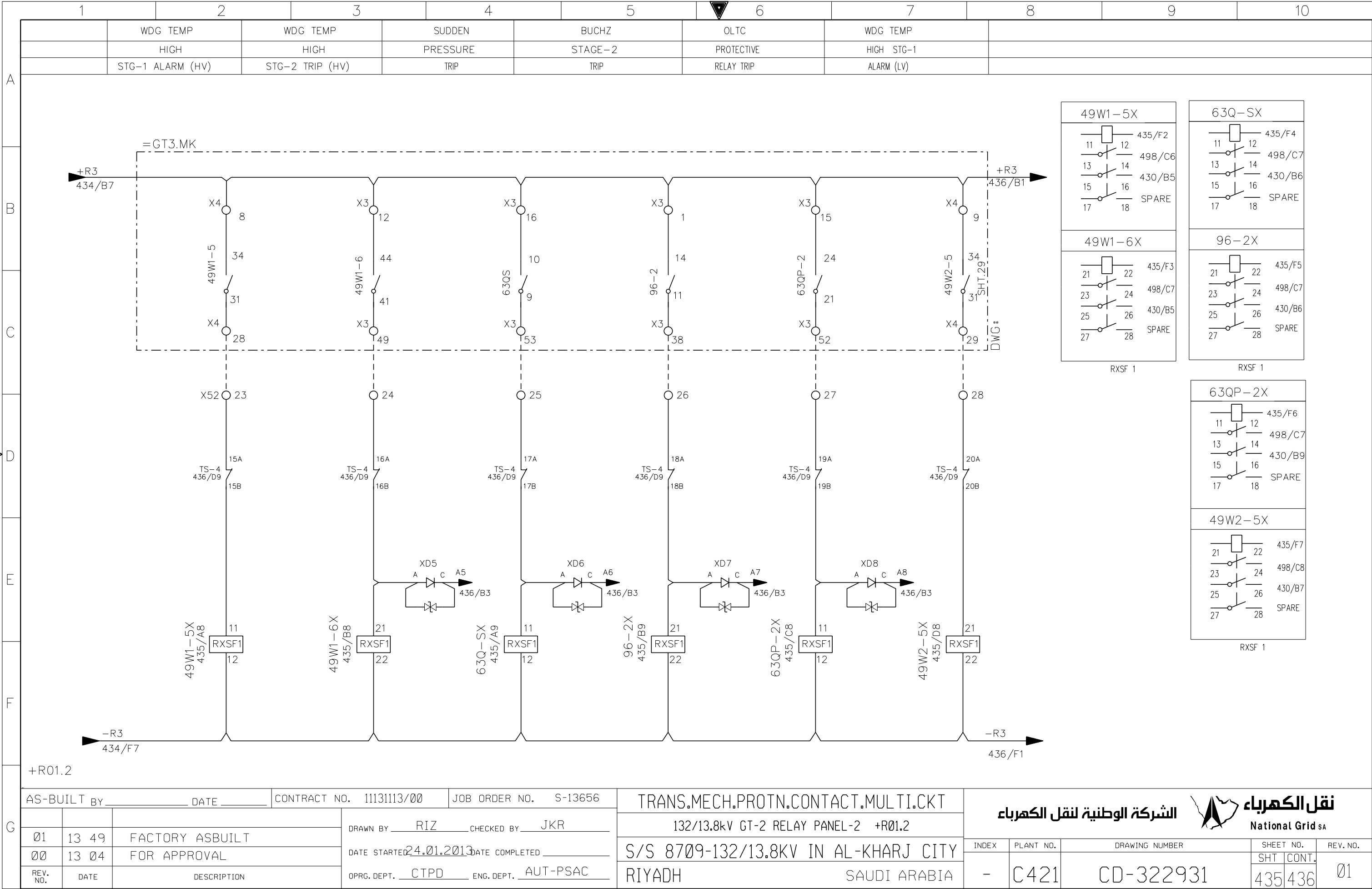
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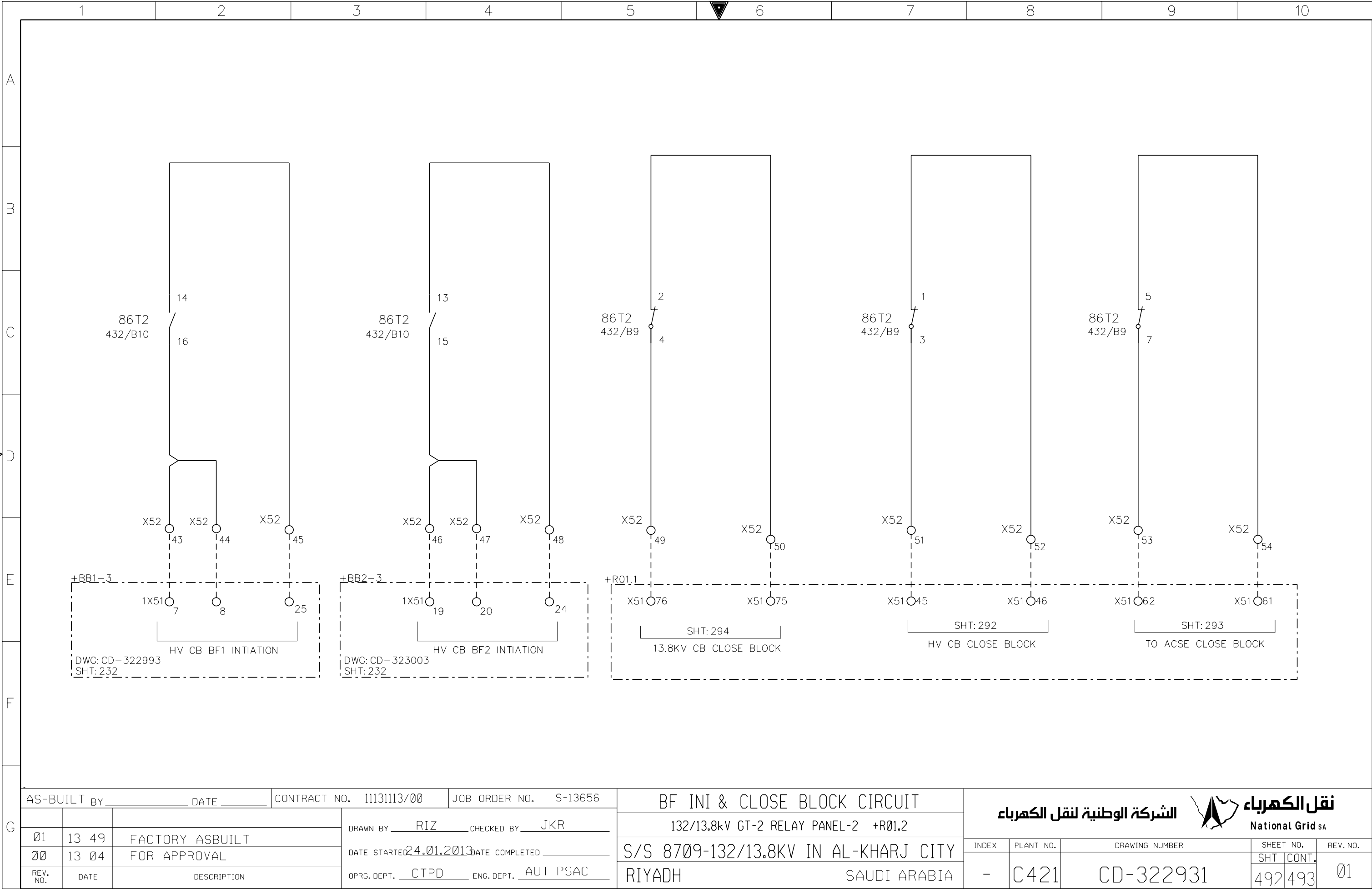


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRANS .MECH.PROTN.CONTACT MULTI.CKT	
			DRAWN BY <u> RIZ </u> CHECKED BY <u> JKR </u>		132/13.8kv GT-2 RELAY PANEL-2 +R01.2			
01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			
00	13 04	FOR APPROVAL	OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>		RIYADH SAUDI ARABIA			
REV. NO.	DATE	DESCRIPTION						

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322931	SHT CONT.	01
			434	435



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A

B

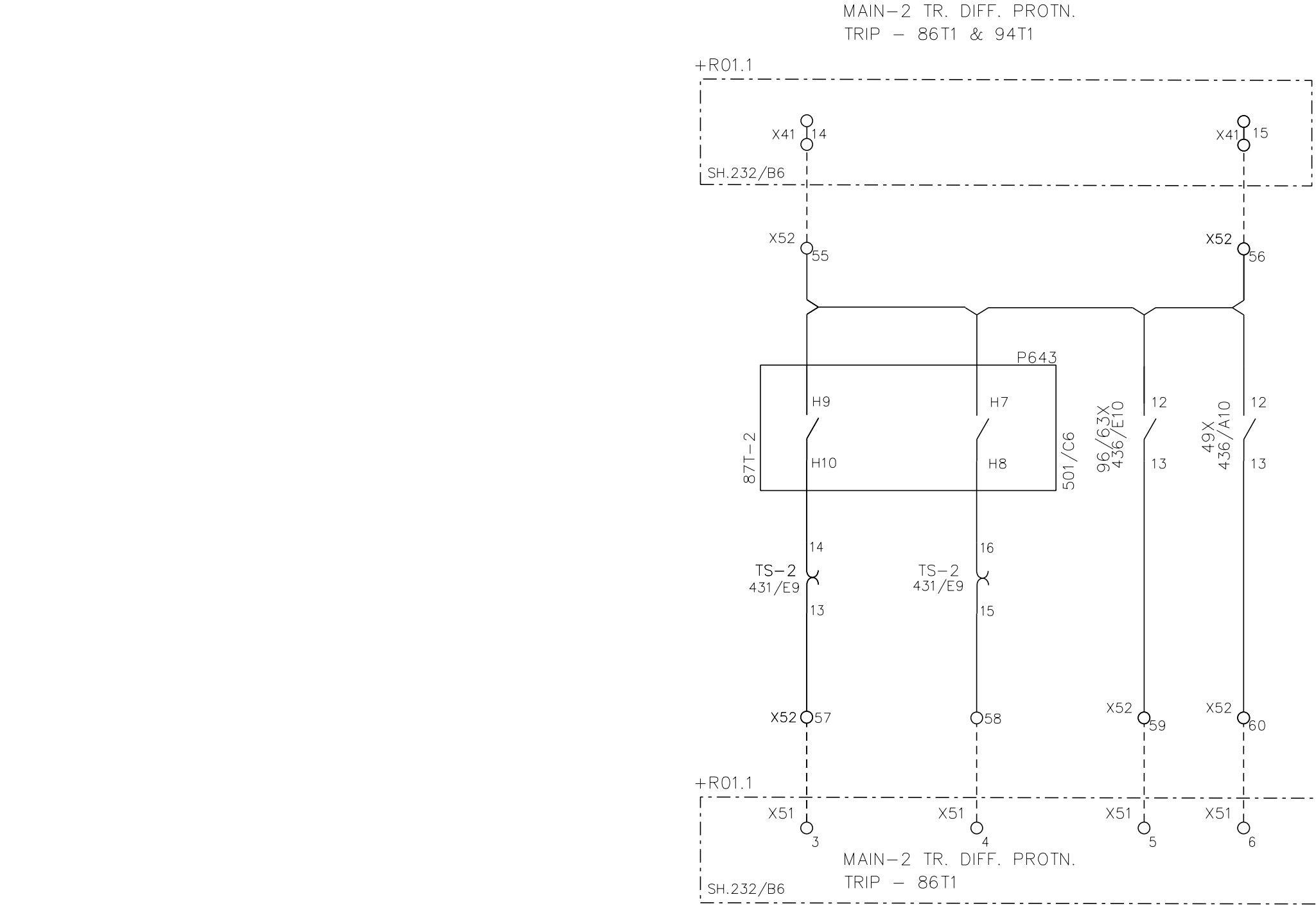
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D


E

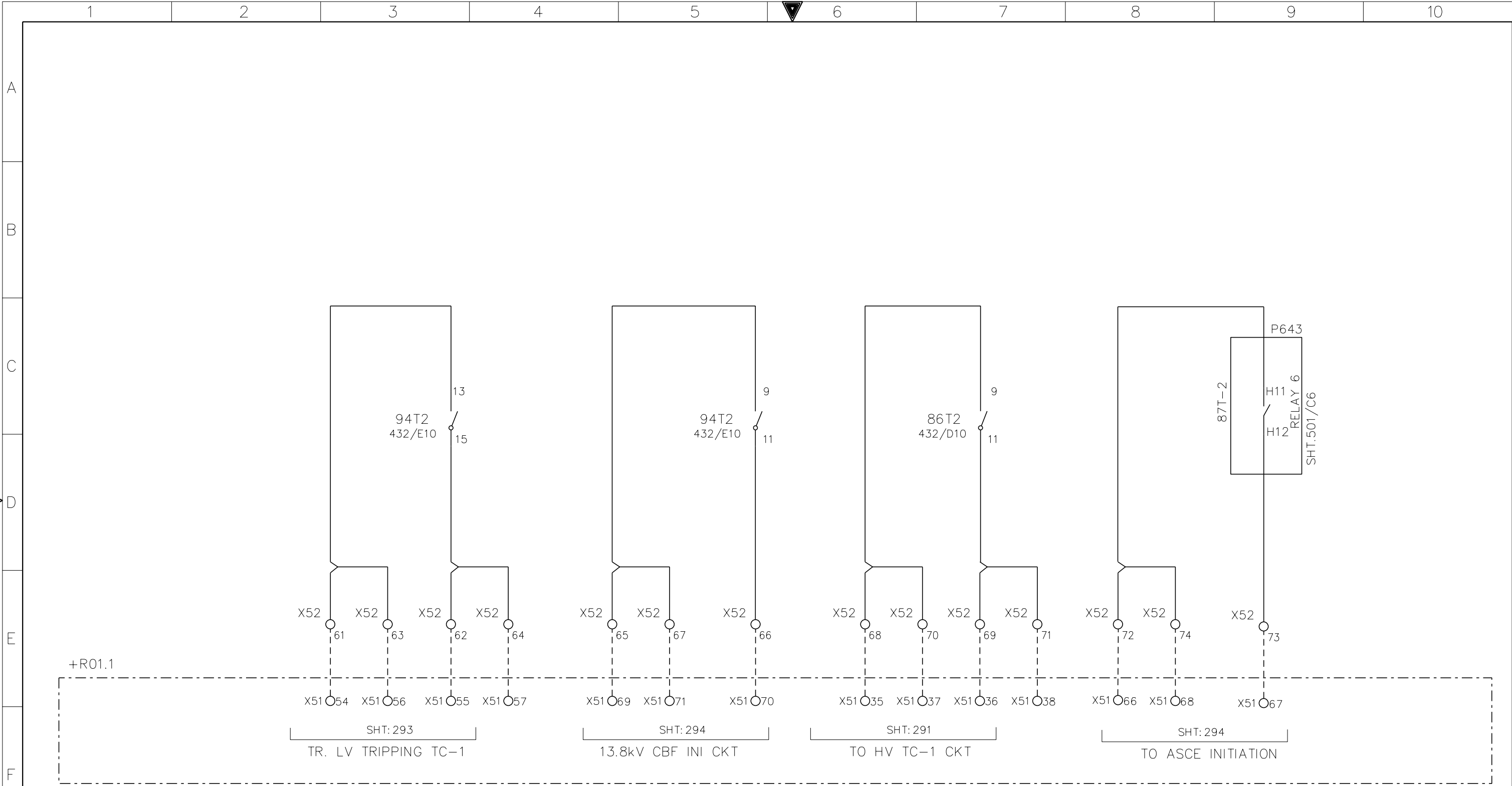
F

G



+R01.2


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRANSFORMER MECHANICAL PROTN.		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء National Grid SA</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY <u> RIZ </u> CHECKED BY <u> JKR </u>			132/13.8kV GT-2 RELAY PANEL-2 +R01.2				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY							SHT	CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>			RIYADH SAUDI ARABIA							-	C421	

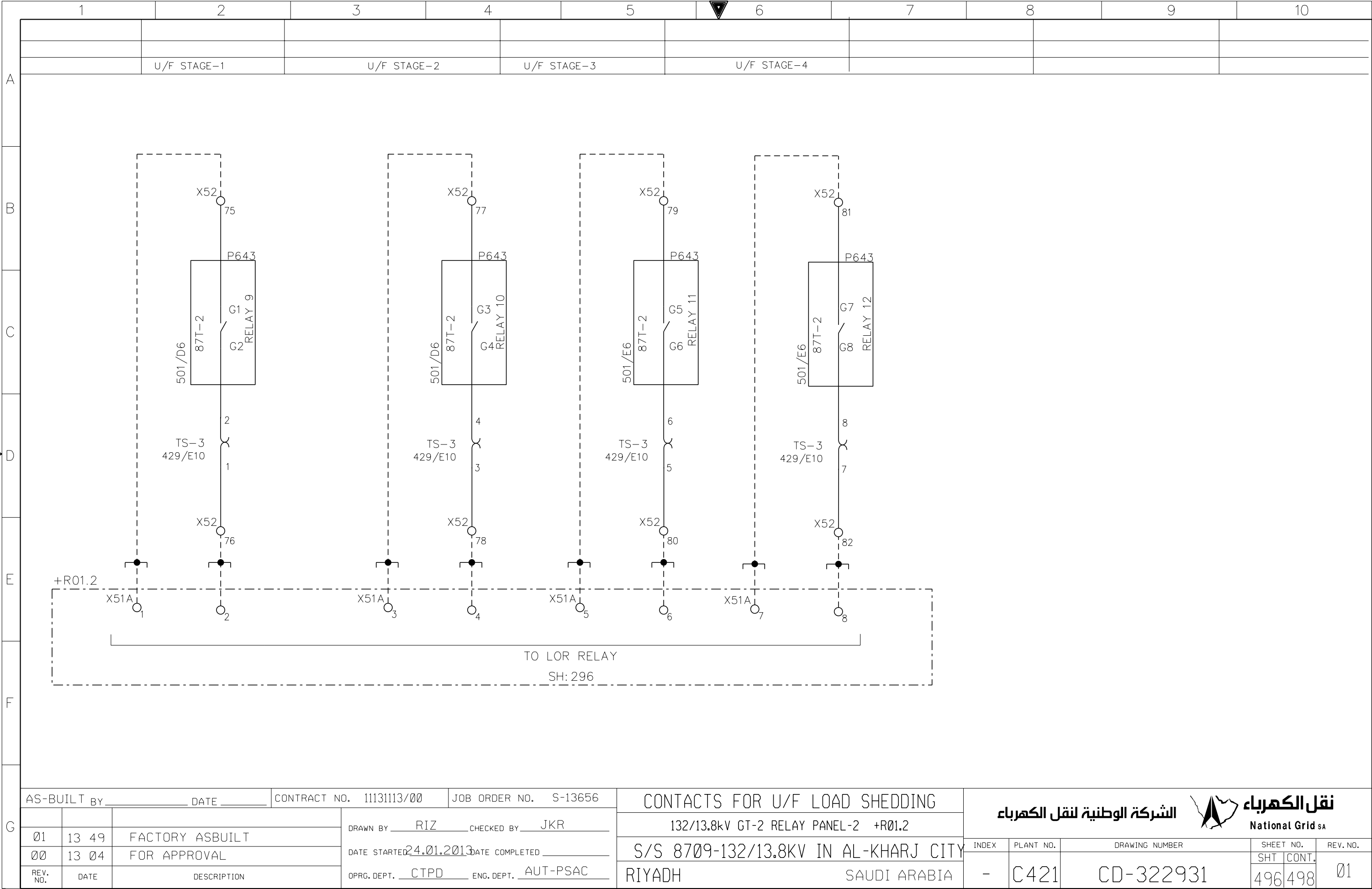


G

AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

CONTACTS FOR TRIP AND CLOSE BLOCK					
132/13.8kV GT-2 RELAY PANEL-2 +R01.2					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء					 نقل الكهرباء	
					National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322931		SHT 494	CONT. 496	01



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

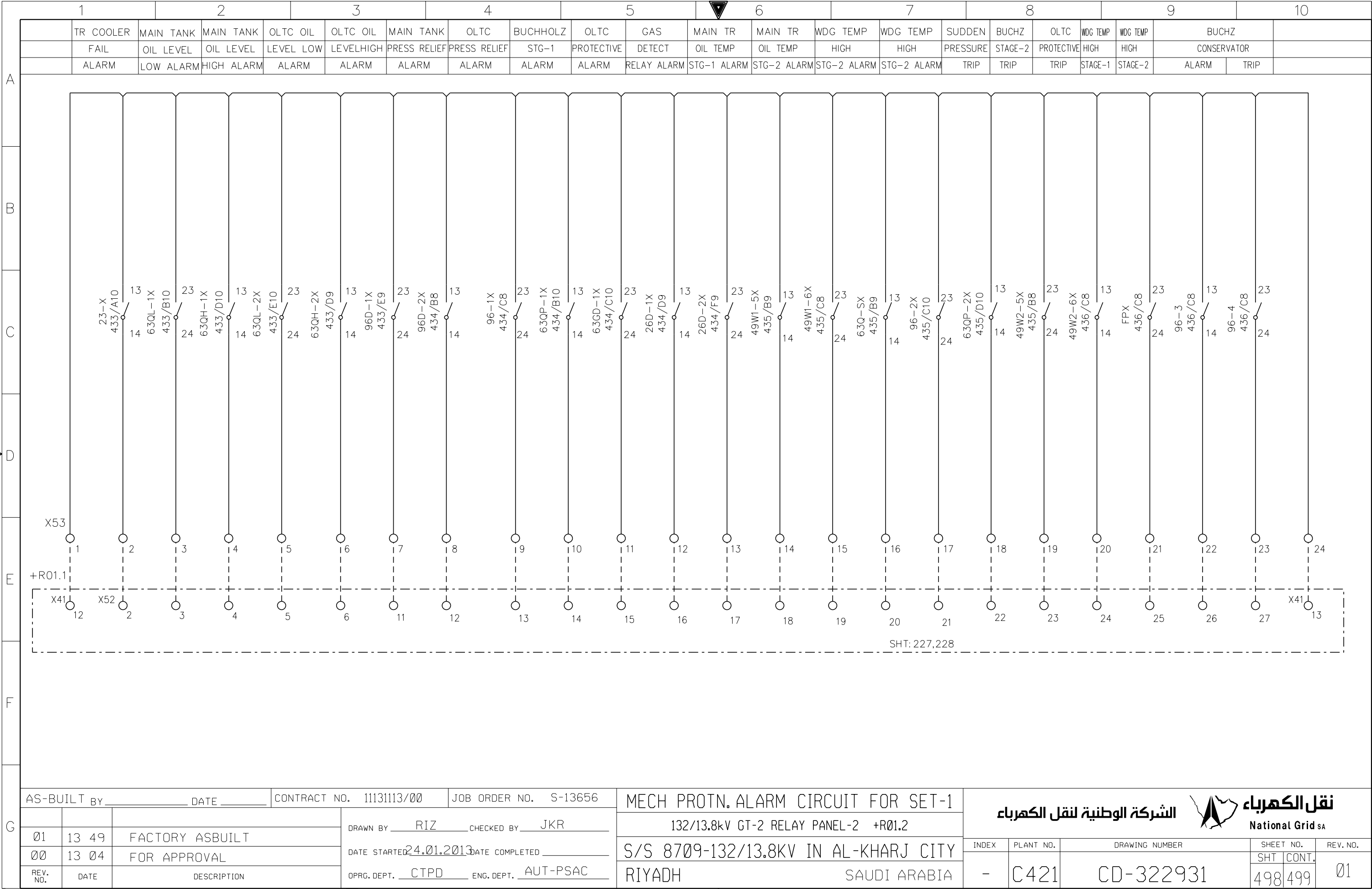
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

CONTACTS FOR U/F LOAD SHEDDING

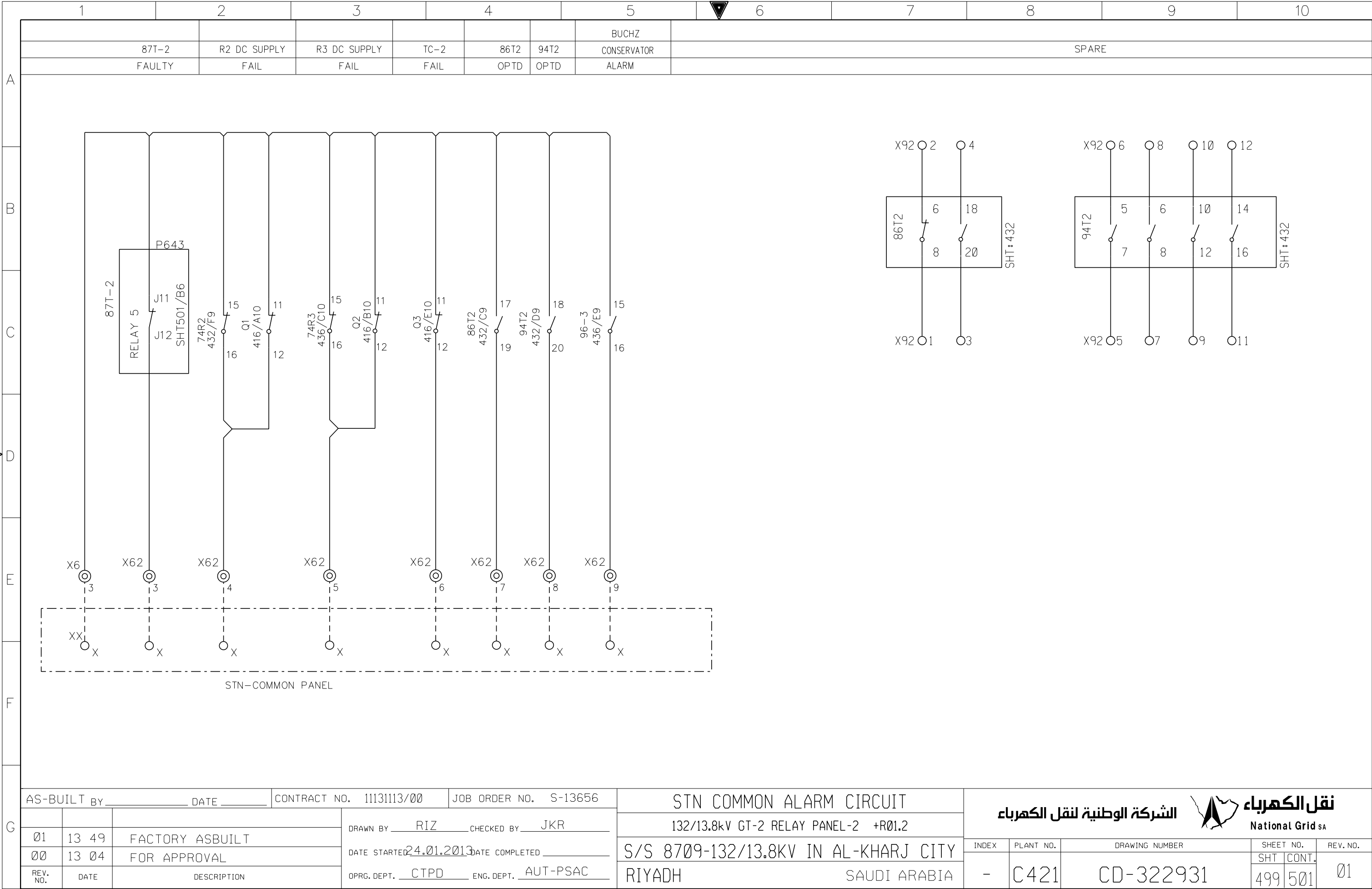
132/13.8kV GT-2 RELAY PANEL-2 +R01.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322931	SHT 496 CONT. 498	01



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	1	2	3	4	5	6	7	8	9	10
A										
B	REFERENCE		X62 ALARM CKT		REFERENCE		X92 SPARE			
	414/B3	1	499/C6	1						
C	414/B4	2	499/B6	2						
	498/E1	3	499/C7	3						
	498/E2	4	499/B7	4						
	498/E2	5	499/C8	5						
	498/E3	6	499/B8	6						
	498/E3	7	499/C8	7						
	498/E4	8	499/B8	8						
	498/E4	9	499/C8	9						
	SPARE	10	499/B8	10						
	SPARE	11	499/C9	11						
D	SPARE	12	499/B9	12						
	SPARE	13	SPARE	13						
	SPARE	14	SPARE	14						
	SPARE	15	SPARE	15						
	SPARE	16	SPARE	16						
	SPARE	17	SPARE	17						
	SPARE	18	SPARE	18						
	SPARE	19	SPARE	19						
	SPARE	20	SPARE	20						
	E									
F										
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCK REFERENCE		الشركة الوطنية لنقل الكهرباء National Grid sa	
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-2 RELAY PANEL-2 +R01.2			
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-322931 507 NIL 01	